THE RAILWAY GAZETTE
A Journal of Management, Engineering and Operation
INCORPORATING
The Railway Engineer · TRANSPORT · The Railway News
The Railway Times · Herapath's Railway Journal · RAILWAY RECORD.
RAILWAYS ILLUSTRATED · ESTABLISHED 1835 · The Railway Official Gazette

PUBLISHED EVERY FRIDAY
AT
33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1

Telegraphic Address: "TRAZETIE PARL., LONDON"
Telephone No.: WHITEHALL 9233 (7 lines)

Annual subscription payable in advance and postage free:
British Isles and Abroad.....£2 5s. 0d.
Single Copies.....One Shilling
Registered at the General Post Office, London, as a Newspaper

VOL. 78 NO. 9 FRIDAY, FEBRUARY 26, 1943

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DIESEL RAILWAY TRACTION SUPPLEMENT

The March issue of THE RAILWAY GAZETTE *Supplement, illustrating and describing developments in Diesel Railway Traction, will be ready on March 1, price 1s.*

GOODS FOR EXPORT

The fact that goods made of raw materials in short supply owing to war conditions are advertised in this paper should not be taken as indicating that they are available for export

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE *possesses the necessary permit and facilities for such dispatch.*

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

REDUCTION IN SIZE OF PAGE

To economise in paper our readers will observe a slight reduction in the size of THE RAILWAY GAZETTE *in that the size of the page has been reduced from 9 in. × 12 in. to 8½ in. × 11½ in. The type area of the page remains the same, namely, 7 in. × 10 in., but the surrounding margins have been reduced. This of course detracts from the appearance of the paper, but is one of the exigencies of the war*

TO CALLERS AND TELEPHONERS

Until further notice our office hours are:
Mondays to Fridays 9.30 a.m. till 5 p.m.
The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

The Home Railway Dividends

WITH the exception of the Southern Railway Company, which is repeating for 1942 the payments made for the previous year, all the home railways have fulfilled the hopes which had been entertained of higher distributions. Details of the directors' announcements concerning revenues and dividend proposals are given on page 227. The G.W.R. consolidated ordinary stock is to received 4½ per cent. for 1942 against 4 per cent. for 1941; net revenue was £979 higher at £6,932,746. A year ago £250,000 was placed to contingencies. L.N.E.R. 4 per cent. second preference stock will get 2⅜ per cent. compared with 2⅜ per cent. Net revenue is £10,700,599, an advance of £53,572. This year £200,000 (compared with £300,000) goes to contingencies fund. In the cases of both companies the distributions now proposed are the best since those for 1930; then G.W.R. ordinary received 5½ per cent. and L.N.E.R. 4 per cent. second preference its full rate. The Southern Railway board proposes to maintain the payment of 1¾ per cent. on the deferred ordinary stock. Net revenue declined by £20,746 to £6,913,514. As was recorded in our last week's issue, L.M.S.R. ordinary stock is to get 2½ per cent. against 2 per cent. for 1941; net revenue rose £340,000 to £15,590,000 and £400,000 is again being placed to contingencies fund. The London Passenger Transport Board is to pay 3 per cent. (against 2⅞ per cent.) on the "C" stock. Net revenue was £4,882,917, compared with £4,844,659.

Forecast and Actuality

In our January 15 issue we gave some forecasts as to the earnings and dividends which were expected on the home railway stocks. With the exception of that of the Southern Railway, which has confounded all the prophets, the recent announcements have been in fairly close proximity to the hopes then expressed. The Southern appears to have suffered a setback in its revenue from sources outside the control agreement, largely receipts from road transport undertakings. Below is given a table showing the payment by the Government, non-controlled revenue estimated and realised, total net revenue, and dividends estimated and proposed on the most junior stock:—

	G.W.R.	L.M.S.R.	L.N.E.R.	S.R.
	£	£	£	£
Government payment	6,670,603	14,749,698	10,136,355	6,907,659*
Non-controlled rev. (estimated)	*300,000*	*800,000*	*500,000*	*180,000*
Non-controlled (actual)	262,143	840,302	564,244	5,855
Net revenue (estimated)	*6,970,603*	*15,549,698*	*10,636,355*	*7,087,659*
Net revenue (actual)	6,932,746	15,590,000	10,700,599	6,913,514
Div. estimated	4½%	2½%	2½%	2%
Div. proposed	4½%	2½%	2⅜%	1¾%

* Including £300,000 allowance of interest on capital.

The yields which are still obtainable on junior railway stocks are exceptional, in view of the security behind the investment which had provided a rental arrangement with the Government. In no other section of the market is it possible to buy securities yielding approximately from 7½ to 8½ per cent. This suggests that with the weight of money now seeking investments there will probably be a further rise in the prices of stocks, until the yield is reduced to a level more in line with that in other sections of the Stock Exchange, where, indeed, it is difficult to secure a 5 per cent. yield with security of capital. The table below, which was given in the *Daily Mail* of February 22, shows prices and yields six months ago and at the end of last week:—

Stock	Price Sept. 1, 1942	Yield % £ s. d.	Price now	Yield % £ s. d.
G.W.R. ord.	46½	8 13 0	60⅞	7 8 0
L.M.S.R. ord.	20⅞	9 12 9	29½	8 12 0
L.N.E.R. 2nd pref.	22¼	10 9 0	31¼	8 6 0
Southern defd.	17	10 6 0	23½	7 10 6

There can be little doubt that the high yields obtainable are a reflection of post-war uncertainties; nevertheless, it seems improbable that in a settlement after the war the revenues and services of the railways in a time of national peril could be completely ignored.

Contradictory Views

The Railway Clerks Association seems to lack consistency in some matters, one of which is the standard revenue provisions of the Railways Act, 1921. In the February issue of the *Railway Service Journal* comment is made on an address by Mr. John Miller, Chairman of the Scottish Branch of the Railway Stockholders' Union, in which he said that representatives of British railway stockholders should see to it that any settlement with the Government was on the basis of the standard revenue

provided for in the Railways Act. The *Journal* declares that "the Railways Act of 1921 did not 'provide' for a standard revenue, all it did was to say that if the companies could get it, they could have it." It adds that to encourage the belief that the companies would be able to earn it in the post-war years is to deny the experience of the last twenty years. This reads strangely in contrast with a booklet issued by the Railway Clerks Association, in 1922, entitled "The Reorganisation of British Railways." The author of that work declared that "as the state has accepted a considerable measure of responsibility for seeing that the standard revenue for the railway shareholders is obtained, it has become still further involved in the railway industry, and thus in all probability unification has been brought nearer. As under a railway nationalisation scheme, the railway shareholders should receive a guaranteed income, and the provisions described give to them (in a method for which the State has accepted some responsibility) which for all practical purposes is intended to be a guaranteed minimum income, one result of nationalisation has been secured." It would seem, therefore, that 21 years ago the R.C.A. contemplated that standard revenue would be earned and was prepared to argue on that basis.

Indian Railway Surplus

Indian Railways estimates presented by Sir Edward Benthall in the Indian Legislative Assembly, show a surplus of about £27,250,000 for 1942-43 and £27,000,000 for 1943-44. In 1942-43 traffic receipts are expected to total about £112,000,000 or £10,500,000 more than in the previous year. The estimates provide for about £9,500,000 for depreciation and over £21,000,000 for interest. The estimates for 1943-44 show an increase of about £500,000. There is an advance of about £2,000,000 in ordinary working expenses but a decrease of about £1,000,000 in payments to worked lines. Of the surplus for 1942-43, sums of £15,000,000 will go to general revenues and £12,000,000 to the depreciation reserve fund. The balance, estimated at £53,000, will be transferred to the railway reserve. About £4,475,000 will go to the depreciation fund from the railway reserve; in this way the liabilities to the general revenue for arrears of contribution and to the depreciation fund for outstanding loans will be eliminated. By abandoning the clauses of the convention as to the contribution and allocation of surplus, the surplus of the commercial lines in 1943-44 will be divided between the general revenues and the railways in the proportion of three to one. Over £20,250,000 will go to general revenues and £6,750,000 to the railway reserve. According to reports by Reuters from New Delhi, the depreciation fund balance will be over £61,500,000 at the end of 1942-43 and about £63,000,000 by the end of 1943-44. The balance in the railway reserve fund at the end of 1942-43 is expected to be less than £500,000 and at the end of 1943-44 over £7,000,000. The programme of expenditure from capital and the depreciation fund during 1943-44 provides for £18,000,000, including £5,000,000 for locomotives.

British Investments in Argentina

British investments in Argentina which were quoted on the London Stock Exchange at the end of 1942, totalled £387,289,720, on which the average interest received was £9,345,780, equal to 2·4 per cent., which compares with 2·3 per cent. for 1941. At the end of last year there was still £202,927,976 of capital on which no interest was forthcoming. Argentine Government bonds amounted to £45,979,661, and showed a very large decline in the total outstanding because of sinking fund applications and redemptions by purchase during the year. The average yield was as high as 5·3 per cent. compared with 4 per cent. for 1941, and it may be mentioned in passing that the average yield on all South American bonds was 2·1 per cent. The increase in the Argentine yield in 1942 was the result of the heavy payments that were made during that period on the Corrientes bonds. *The South American Journal*, which makes a yearly compilation of Argentine investments, shows that last year the amount invested in railways in that country, and quoted on the London Stock Exchange, was £260,488,253, on which £3,686,526, or 1·4 per cent., was paid. That rate was the same as for the previous year. No interest was forthcoming on £179,159,888 of capital, or 68·8 per cent. of the total. The railway group is, and has been for many years, the least fortunate in the return it has been able to make to those who have financed the construction of the great systems on which so much of the prosperity of Argentina has been based.

Australian Railways in 1941-42

Two of the principal Australian railway administrations, the Victorian and New South Wales Government Railways, were able to report considerable increases in revenues during the year ended June 30, 1942. Gross and net revenues of the Victorian system amounted to £14,519,838 and £2,931,520, respectively. The final surplus, after allowing for interest, exchange, and a sum of £124,259 paid into the national debt sinking fund, was £649,347, as compared with only £26,594 in the previous year and deficits in several earlier years. Revenue a traffic train-mile rose from 12s. 9d. in 1940-41 to 16s. 0¼d. last year and was mainly responsible for the improved financial position. In New South Wales a record revenue of £27,688,332 was earned, a figure higher by £4,470,722 than that for 1940-41. Working expenses rose also, by £4,550,636, to £21,712,560. The surplus for 1941-42 was £203,899, as compared with £235,951 in the previous year and with a deficit of £443,833 in 1939-40. In view of the wide powers of control by the Commonwealth over the railways, and, in particular, of the recently established order restricting civilian interstate traffic, a movement is on foot to induce the Commonwealth to accept some financial responsibility for any loss of revenue which such legislation may involve.

Spreading Passengers Evenly

There is a tendency, when duplication of long-distance trains is necessary, in order to accommodate the traffic, to stop both portions of each train at many, if not all, of the same stations. The almost inevitable result is to overcrowd the first train of the pair, as very few passengers can be prevailed on to wait for a second portion, even in the interests of their own comfort. For some time past the L.N.E.R. has been experimenting with the stops on its day trains between Kings Cross and Edinburgh, which run in pairs in each direction, but from March 1 has decided on a drastic revision of their intermediate stops, with the general purpose of providing only one train to and from each important town on the route, and so spreading the passengers evenly between each of the four trains concerned. Thus, in the down direction, the 9.50 a.m. from Kings Cross is to stop at Grantham, Darlington, and Newcastle, and the 10 a.m. Flying Scotsman at Peterborough, Grantham, York, Newcastle, and Berwick; coming up, the 10 a.m. from Edinburgh will call at Newcastle, Darlington, and Grantham, and the 10.10 a.m. at Dunbar, Berwick, Newcastle, York, Doncaster, and Peterborough. It is the first time since the war began that any L.N.E.R. passenger trains have been booked to run through York without stopping; and the omission of stops not only permits certain trains to be accelerated (the 9.50 a.m. down by 12 min. and the 10.10 up by 18 min.), but should improve punctuality by no longer making it necessary for long and heavy trains to stop at the same stations immediately ahead of one another.

Retarding Rail Corrosion

A close analysis of the loss of weight by steel rails in the track, which when it has reached predetermined limits compels replacement, would very likely prove that a considerably greater proportion than is generally imagined is due to corrosion and its effects. Corrosion loss in tunnels, particularly those with sulphur-laden atmosphere from locomotive exhaust and humid conditions, needs no stress, but in the open also corrosion may be no small factor in determining the life of a rail. In certain highly-industrialised areas rail corrosion may be accelerated from atmospheric causes, and in the United States, on routes carrying a heavy refrigerator traffic, the rails suffer appreciably by droppings from the refrigerator cars. More than twenty years ago the New York Central System, on which both the last-mentioned causes of corrosion give considerable trouble, began the oiling of rails and fastenings in an experimental way, and found it so successful in retarding corrosion that this has now become standard practice in the areas concerned. Oil with a high asphalt content, round 55 per cent., has proved the most suitable for this purpose, and the oil most nearly fulfilling this requirement is a distillation residue from asphaltic-base petroleums. A specially equipped train is used for the oiling, delivering 90 gal. per mile of warmed oil at a uniform speed of 20 m.p.h., which has been found the most suitable for the purpose in view. Special nozzles on both sides of the rail spray the oil in a finely atomised condition, and are so arranged that the spray is kept off the running surface. The most frequent oiling takes place annually, but it is not necessary to deal with all lines as often as that; in 1940 the total length of N.Y.C. track thus oiled was 5,350 miles, and in 1941 4,491 miles.

Cancelled Conventions

There appears to be a marked division of opinion in the United States as to whether the conventions of railway officials that are normally held every year should be continued in the stress of war conditions. Some organisations, such as the Master Boiler Makers' Association, the Car Department Officers' Association, the Locomotive Maintenance Officers' Association, and the Railway Fuel & Travelling Engineers' Association, have during 1942 conducted "conventions-in-print." The summarised findings of specially-appointed committees on important subjects which would normally figure in convention programmes have been printed in our contemporary the *Railway Mechanical Engineer*, and discussion is invited in later monthly issues of the same journal. Other conventions, however, such as those of the American Association of Railroad Superintendents, the Roadmasters & Maintenance of Way Association, and the American Railway & Bridge Building Association, have been held as usual. In commenting editorially on the decision to abandon conferences, our contemporary is doubtful as to its wisdom. The acute problems aroused by the war make it more, rather than less, necessary for those bearing the major burdens of administration to get together for the maintenance of contact and the exchange of ideas. While the *esprit de corps* of the associations is maintained, and useful work done, by the determination to salve the utmost that circumstances permit from the situation caused by the cancellation of the meetings, even the "convention-in-print" idea is an inadequate substitute for contacts made by attendance at conventions, which undoubtedly speeds progress.

The Yellow Light in South Africa Forty Years Ago

Recent reference to a rule book, dated 1905, but referring to a slightly-earlier period, and covering, for the use apparently of military officers, the signalling and train-working methods in force in South Africa from the end of the Transvaal war until the formation of the Union, shows that the distant signals of the then Central South African lines had yellow lights for the "on" position. Surely this was by a long period the first instance of such a practice on a main line in the British Empire? It probably just antedated the employment of yellow lights in the repeater signals installed with the first automatic-signalling sections on the District Railway, concurrently with electrification. The Central South African signalling was peculiar in several respects, as explained in our issue of September 5, 1941, page 236, and presented many points of interest, affording a combination of some methods used by the Netherlands South African Railway Company in Transvaal days and the best British practice. The upper-quadrant movement of the arms was adopted later for the entire Union, but the practice of colouring them white on the front, which, it was thought originally, would give better visibility than the traditional red, was not continued.

Eight-Coupled Wheels

In view of the widespread popularity, both in North America and on the mainland of Europe, of eight-coupled driving wheels for the heaviest passenger service, in locomotives of the 4-8-4, 4-8-2, 2-8-4, and 2-8-2 types, it is curious that no attempt to introduce eight-coupled wheels into Great Britain for passenger purposes has met with complete success. Both of the principal British experiments in this direction have emanated from Doncaster. In 1903 Mr. H. G. Ivatt, then Locomotive Superintendent of the Great Northern Railway, built his powerful 0-8-2 tanks for the London suburban services, with their heavy grades, in particular the 1 in 59 climb from Finsbury Park to Highgate on the High Barnet branch. Despite a later reduction in the size of the side tanks, the engines proved too heavy, and before long were transferred to mineral work in the Midlands. Thirty-one years later Ivatt's successor, the late Sir Nigel Gresley, put on the rails his "Cock o' the North" type 2-8-2 express engines, to cope with the difficult operating conditions between Edinburgh and Aberdeen; and now the conversion of one of these locomotives to a 6 ft. 2 in. Pacific, foreshadowing as it does the end of the "P2" class in its original form, appears to indicate that this second notable eight-coupled experiment also has failed in its original purpose. It would have been interesting if these locomotives could have been tried in their eight-coupled form on the heavy passenger services between Kings Cross and Doncaster in present wartime conditions, as their ample adhesion and cylinder power might have proved valuable in starting heavy trains out of Kings Cross or southwards from Grantham, and there is on this section none of the constant curvature that has given trouble north of Edinburgh; neither is any high speed required in order to maintain time.

London Midland & Scottish Railway Company

THE full report for the year 1942 which has now been issued is given in an abbreviated form. Reference is made to the White Paper (Cmd. 6403) formulating the Government proposals for legislation to deal with public utility undertakings, including railway undertakings. This White Paper is receiving careful attention and discussions are taking place with the Government, but until the proposed Bill is in draft it is not practicable to give any detailed information. In the meantime the liability for war damage has once more been borne in mind in the preparation of the accounts.

Net revenue of the company amounted to £15,589,883, or £339,672 more than for 1941. After again setting aside £400,000 for wartime contingencies and meeting interest on debenture stocks the balance available for dividends, including £198,744 brought forward from 1941, is £10,949,457. After payments at the full rates on the guaranteed and preference stocks, this will admit of a dividend of 2½ per cent. on the ordinary stock, leaving £95,013 to be carried forward. Dividends on the ordinary stock for the past ten years follow :—

1933	1934	1935	1936	1937	1938	1939	1940	1941	1942
%	%	%	%	%	%	%	%	%	%
nil	nil	nil	1¼	1½	nil	1½	1½	2	2½

Results for the past three years are given herewith :—

	1940	1941	1942
	£	£	£
Total expenditure on capital account ...	461,161,709	462,204,750	462,480,127
Joint lines—Company's proportion of net revenue	112,725	112,725	112 725
Miscellaneous receipts (net)	*581,088	*775,775	*783,759
Net revenue	14,706,700	15,250,211	15,589,883
Interest on debenture stocks	4,439,170	4,439,170	4,439,170
Dividends on guaranteed and preference stocks	8,474,383	8,474,383	8,474,383
Balance after payment of preference dividends	1,793,147	2,336,658	2,676,330
Dividend on ordinary stock	1,428,037	1,904,049	2,380,061
Rate per cent.	1½	2	2½
Wartime contingencies	300,000	400,000	400,000
Surplus or deficit (+ or −)	+ 65,110	+ 32,609	− 103,731
Balance brought forward from previous year	101,025	166,135	198,744
Balance carried forward to subsequent year	166,135	198,744	95,013

* Other than those included in financial arrangements with Government

The miscellaneous receipts (net) include interest and dividends from investments in other undertakings, general interest, and profit on the working of the Northern Counties Railway (Ireland). The profit on this railway was £259,327 in 1942, compared with £244,246 in 1941. The return from investments in associated passenger road undertakings was £456,504, and from associated road goods undertakings was £51,834.

Great Southern Railways Company (Eire)

THE report for the year 1942 points out that the comparatively unfavourable results shown were partly due to the fact that in 1941 there was a windfall of £252,971 in respect of overpaid rates recovered by the company from local authorities. Among reasons given for now deferring payment of a dividend on the guaranteed preference stock and arrears due in respect thereof for the year 1941, are the financial position of the company and the fact that no provision has been made in the 1942 accounts for renewal of railway rolling stock and permanent way. In the 1941 accounts a provision of £130,000 was made for deferred renewals and maintenance of permanent way, and for deferred renewals and maintenance of rolling stock the provision was £160,000. Some figures for the past three years are shown in the accompanying table :—

	1940	1941	1942
	£	£	£
Total expenditure on capital account	31,284,723	31,234,625	31,237,580
Railway gross receipts	3,437,225	3,975,589	3,928,417
Railway revenue expenditure	3,101,459	3,621,627	3,721,520
Railway net receipts	335,766	353,962	206,897
Net receipts from other businesses	Dr. 2,816	174,495	329,869
Miscellaneous receipts (net)	25,906	38,421	30,480
Total net income	358,856	566,878	567,246
Rates recovered transferred from suspense ...	—	252,971	—
Interest, rentals, and other fixed charges ...	403,617	559,481	468,680
Dividends on guaranteed preference stock ...	—	*233,180	—
Surplus or deficit (+ or −)	−44,761	+27,188	+98,566
Proportion of compensation (Settlement of Claims) Act, 1921	7,701	—	—
Brought forward	37,060	—	27,188
Carried forward	—	27,188	125,754

* For years 1938, 1939, and 1940

Gross receipts of the whole undertaking in 1942 were £5,340,187, against £5,172,020 in 1941; expenditure rose from £4,643,563 to £4,803,421; and net receipts were £536,766 compared with £528,457. The improvement in net receipts from businesses other than the railway was due to the fact that road transport net receipts increased from £181,557 to £336,321. Catering profits were about

the same, £6,214 against £6,823. The number of railway passengers (including season ticket holders) declined from 6,086,772 to 4,177,591, and railway passenger receipts from £866,028 to £762,697, but bus passenger receipts rose from £582,519 to £663,624. Road goods receipts also advanced from £419,694 to £544,024. In railway goods traffic, apart from livestock, there was a drop from 2,795,447 tons to 2,724,149 tons, and in receipts from £2,235,173 to £2,230,149. Although general merchandise and coal business was considerably less there was an appreciable increase under "other minerals." Livestock receipts, however, improved from £296,772 to £418,551. Total engine mileage was only 8,726,259 in 1942 against 10,368,328 in 1941. The increase in railway working expenditure was almost entirely under locomotive running which advanced from £1,113,545 to £1,478,299, and under traffic expenses which were £832,783 against £786,567.

Irregular Release of a Home Signal

THE accident on the Southern Railway at Waddon on November 4, 1942, when, during a dense fog, a signalman forgot a train standing in the station and cleared the protecting home signal, has again raised a question which was much discussed at one time but, with the extension of track-circuit working and automatic signalling, has been comparatively little heard of in recent years. In many respects this accident resembles that which took place at West Hampstead, Metropolitan Railway, on October 26, 1907. The initial blunder was precisely the same; the train in the station was forgotten during fog and never signalled forward at all. The home signal was correctly locked but later irregularly released in some way. The apparatus was different, however, and to understand the evidence given in the Waddon case, the essentials of which appeared in our summary of Colonel A. C. Trench's report in last week's issue, it is necessary to know something of the working of the particular form of Sykes lock-and-block apparatus in service at the signal box concerned, which had been installed in the days of the L.B. & S.C.R. It must be emphasised that the Sykes apparatus did not take the same form on all the lines which adopted it and that a signalman accustomed only to, say, the G.E.R. or L.S.W.R. type of instruments would not, without further explanation, be able to understand all the facts involved in the Waddon accident.

On the L.B. & S.C.R. the rear section indicator had but two indications, a blank white sign or the words "train on," which appeared when the plunger was used to release the signal in the rear. The electric semaphore block indicator at that box, normally down, was thrown up when this took place and not lowered again until the instrument at the box in advance was re-set by the use of the signal lever connected with it. The switch-hook also controlled the electric semaphore but did not need to be used for ordinary through movements. (The same apparatus was used on the S.E. & C.R., on which, in the London district, there were many sections where no "train entering section" signal was given.) At many signal boxes—and this was the case at Waddon—the accepting plunger could not be used unless not only was the rear section indicator normal but the lock on the home signal free as well, making the starting signal the effective clearing point. To prevent the electric semaphore in rear from being lowered too soon, its circuit was controlled over the lock mechanism and not completed unless this was "free." When therefore the Epsom train was standing at Waddon with the home signal locked at danger in rear of it the semaphore at West Croydon was still up, although the switch-hook had not been turned. If, however, the signalman used the key to clear the home signal lock, and immediately used the accepting plunger, the semaphore at West Croydon would go down and up again, as the signalman there said it did. We can see no reason to doubt his evidence and as the locking portion of the Waddon instrument was purely mechanical—an old design much used in the early days of the Sykes apparatus—an electrical intermittent fault is completely ruled out of consideration. The conclusion is irresistible, that the signalman must, as Colonel Trench remarks, have used the key and forgotten having done so. He had admittedly completely forgotten the train, after speaking to its guard but a few moments before. After the Battersea accident in 1937 instructions were issued to use the switch-hook for all trains on sections equipped as described above. Had the signalman done so it might perhaps have prevented his lapse, although if a man is mistakenly convinced that a train has gone he can as easily believe he has omitted to remove the switch-hook and proceed to do so.

The report refers to the desirability of extending the co-operative form of release and the practice of bringing the station staff into the process in the case of platform block sections, as is done on the Continent to some extent. In our opinion co-operation between signalmen is not sufficient in these cases. In the Waterloo Junction accident, on October 25, 1913, the two men concerned got at cross purposes on the telephone and finally concluded that a cancel was necessary, although a train was still standing in the platform in a fog. They would therefore have used a co-operative release, had one existed, but had the platform official been compelled to join in the action the blunder would have been prevented. In other words, when a train cannot be seen by the signalman he should be obliged, wherever possible, to summon another person who can see it, if still there, to give his consent to any emergency releasing. On the District Railway, in the old days, the signalman could not use the key on his own judgment alone. He had to send for the highest official on duty in the station and put the case in his hands. As already stated, the importance of this question is diminishing with the constant extension of more modern methods of signalling, but wherever lock-and-block arrangements remain it is desirable that every effort should be made to get the maximum degree of security they can afford and prevent, as far as is humanly possible, a single individual destroying it all by jumping to a wrong conclusion.

European Post-War Relief Transport

PLANS for solving the problems of taking relief materials to the impoverished peoples of Europe, after hostilities have ceased in any given area, were referred to briefly in our issue of November 27 last, when we recorded the establishment of the Technical Advisory Committee on Inland Transport under the chairmanship of Professor E. R. Hondelink. Organisational schemes have now been prepared in some detail and are being surveyed by Allied transport authorities. It has been generally agreed that responsibility for the operation of transport facilities within any country will devolve upon the national authorities concerned, but that inter-country and inter-regional traffic may come under some centralised or regional control. Professor Hondelink has stressed the practicability of these arrangements by pointing out that, contrary to widespread beliefs, transport systems in occupied territories have been left under local technical management to a greater extent than in the last war. He has also emphasised that, whereas in the last war hostilities ceased abruptly (at any rate in western Europe) with the signing of an armistice, in this war there is a considerable probability that different regions may be set free in turn before any general armistice is signed. The work of Professor Hondelink's committee is twofold, namely, first to devise the measures required to carry relief supplies to their widespread destinations in Continental Europe, and, secondly, to estimate and specify in quantities, types, and standards, the fixed and movable equipment necessary to restore the inland transport routes which will have to carry the relief supplies. The first is a problem of traffic and operation, the second of reconstruction and engineering. The solution of these problems must also be adapted to the preponderant military transport period immediately preceding the relief period, and to the permanent post-war European transport situation. The transition will have to be examined and organised, and priority schemes for the various classes of traffic will have a place in the scheme.

There are four European regions which have been considered separately, as well as in their common relations with one another, namely, the Northern, Western, South Eastern, and Eastern parts of the Continent. Each region has its own main paths of entry linking up with its own inland transport routes. In addition, some of them share these routes, and most of them have a considerable number of alternative supply routes. Nothing can be predicted about the dislocation and destruction of existing transport routes during the hostilities to come, and provision has therefore to be made on a large scale for alternative transport schemes. The sections of transport which are to have special attention are ports, railways, inland waterways and coastal shipping routes, roads, and airways. In connection with the ports, berthing facilities, quayside equipment, lighterage, trans-shipment equipment, and storage of relief goods (some, such as grain oils, and cold storage goods requiring special storing accommodation), and similar problems present themselves. On the inland routes there is need for the provision of rolling stock, vessels, vehicles, and transport aircraft, on the one hand, and for the reconstruction of permanent way, roads, bridges, locks, and trans-shipment quays, on the other hand. Other problems may arise where the regular administration and management of transport in occupied territories has broken down, or where staff and personnel has been displaced during enemy rule.

Most of the direct relief problems, such as supplying the starved population with food, refugees with shelter, the sick with medical relief, industries with plant and raw materials, and

agriculture with seeds, to restart economic life, are local problems. The transport factor, however, is international in the widest sense, and one of the tasks faced is therefore the co-ordination of many transport services, traffic and operation, on an international footing, using perhaps old international associations where practicable, and designing new ones for the transition period to provide for through and transit relief supply traffic. It is evident that the task before the Technical Committee is a vast one, covering a wide field of transport.

Wartime Railway Construction in Great Britain

IT is common knowledge that the war has thrown additional traffic on the railways sufficient to tax their resources considerably; indeed, the matter has been the subject of repeated references both in Parliament and the daily press. It is perhaps less generally appreciated that the complexity of the problem has been substantially increased by the fact that wartime requirements have in many instances brought about a reorientation of traffic away from normal peacetime channels. The result has been that several routes which in pre-war days carried quite light traffic for which they were designed and equipped have been called upon at short notice to handle a volume entirely beyond their capacity. To meet these demands, the railways have had to undertake a considerable amount of new construction. Precise details as to the location and full extent of these works, of course, must remain a matter of secrecy until after hostilities, but the veil has been partly lifted by Mr. A. S. Quartermaine in a most interesting paper submitted to the Railway Engineering Division of the Institution of Civil Engineers on February 23, which describes some of the wartime construction carried out on the Great Western Railway.

As the author points out, the governing factors affecting these works have been speed of construction, minimum interference with traffic, and the restricted supply of labour and materials. In order to meet these factors, the works described embody a number of novel and ingenious features both as to design and manner of execution. Although some of these were admittedly dictated by the requirements of prevailing conditions, they could well be adopted for similar work carried out in more normal times. It will be generally agreed that even during the far from prosperous pre-war years, British railways spared no effort to improve their efficiency, and the measure of success attained lies in the manner in which they are now meeting the unprecedented and unforeseen demands made on them. Nevertheless, despite all that has been accomplished, a number of important improvements had to remain in abeyance on account of cost. It may well be that profiting by the up-to-date experience with wartime "austerity works" means can be found to justify embarking on them in post-war days.

Among the many good features embodied in the paper we would mention firstly the use of a nomogram for calculating quickly "equivalent grade" and the adoption of an 8-ft. spacing between the additional and adjacent lines instead of the 11 ft. would lead to a substantial reduction in the cost of earthwork, particularly in undulating country where this item is at best heavy. For such spacing to be approved in normal times some modification of the standard requirements of the Ministry of Transport may be necessary and doubtless this will receive sympathetic consideration in due season. The great improvement in the efficiency of soil handling plant has been taken full advantage of and in the case of widenings through land of small value the old technique of earthwork construction has been substantially altered. As the cost of actual excavation and tipping becomes less, that of hauling grows relatively greater and therefore in rural areas it is often more economical to purchase additional land for borrowing and spoiling as haulage costs and interference with traffic on existing lines are obviated. It is interesting to note that advantage has been taken of the comparatively recent science of soil mechanics in order to determine the maximum degree of cutting slope to ensure stability and so minimise the risk of slipping. No doubt earthworks in clay or other unstable material will always be designed in accordance with the dictates of soil mechanics.

Although the bridges described are structures of quite moderate size, some of the constructional methods adopted are of more than passing interest. The employment of a dewatering system to enable a concrete raft foundation to be placed in the dry as an alternative to the sinking of deep foundations requiring cofferdams has much to commend it. Permanent way engineers will await with interest reports as to the behaviour of the track, the chairs of which are bolted down direct to a reinforced concrete bridge deck by through bolts; it is believed that previous experiments to fasten down the chairs direct on to concrete have not been universally successful. As to overline bridges, the construction of openings for the passage of additional lines has under normal conditions frequently been a tedious process; the methods employed in the instances described, in order to minimise interference with both road and rail traffic, are worthy of note

The use of concrete pads with tie bars in place of timber sleepers for sidings and goods yard is becoming common on most railways; it is believed that the tendency for these blocks to tilt inwards has been experienced elsewhere. Although agreeing that this is undesirable, since it causes tightening of the gauge, it is less objectionable to tilting in the reverse direction which would have the opposite effect so far as gauge is concerned. By the publication of this paper the author has rendered great service to railway engineers of the future, as well as to those responsible for present day construction. The devastation caused in the actual fighting areas added to that caused by bombing from the air will inevitably result in shortage of essential materials of construction for many years to come, pooling information of the devices and alternatives adopted by the author and other railway engineers to overcome these difficulties constitutes a valuable contribution not only to speeding the war effort, but to post-war railway reconstruction as well.

Problems of Youth

THE wide measure of interest and agreement expressed in the House of Lords on February 17, is the measure of the importance of the subject raised by Lord Southwood, who drew attention to problems relating to youth in this country. There can be no doubt that, in the period of reconstruction after the war, the youth of this country will be called on to provide much of the zeal, inspiration, and initiative which will be sorely required, and, Lord Southwood pointed out, there will be need for the questing spirit of youth in industry, in commerce, in politics, and in both national and local administration. Therein is the main reason for giving the greatest care to the task of providing youth with full opportunities for self-expression and self-development. To secure this, Lord Southwood had some practical proposals to make, in contrast with rather nebulous aspirations which from time to time have been put forward. He was on good ground when he dealt with the improvements which it is necessary to make to obviate the too great prevalence of blind-alley occupations; it is all too often the case that youths are given employment for a few years in jobs that provide no promise or scope for advancement, and which are terminated when the employee is approaching manhood; the job is then filled by another youth, and the process is repeated. Private industry is by no means the only, or largest, offender in this respect. Government services (the telegraph boys employed by the Post Office are an outstanding example) are also delinquents in this matter. Unemployment in the early age groups was unsatisfactory in many pre-war years. In 1935, when conditions were considered normal, there were 57,000 children between the ages of 15 and 16 officially registered as unemployed in the August return, and that figure, of course, did not cover the considerable number who were not registered. In the same month, the total number registered as unemployed between the ages of 16 and 17 was 44,637. Lord Southwood made the point that unemployment at these early and impressionable ages was most damaging to the whole character and outlook of young people.

The remedies proposed for a state of affairs which the Peers who took part in the debate agreed was seriously unsatisfactory, were: the provision of increased facilities for specialist training, greater attention to the health of adolescents, an expansion of facilities for sport and recreation, and steps for the development of the finer qualities of character. Lord Southwood also stressed the far reaching effects on individuals, the nation, and the world which might be expected to flow from a successful plan to facilitate overseas travel. He emphasised that in dealing with adolescents it was necessary to give guidance to the development of personality and not to resort either to compulsion on the one hand or to coddling on the other. The Earl of Selborne, who replied for the Government, recognised the number of peers who joined in the debate showed how widely it was felt that the subject raised by Lord Southwood was one of the most important which could engage the attention of the Government; he himself found himself in agreement with the substance of the motion, although he pointed to the difficulties inherent in meeting the several peers who had urged raising the school-leaving age to sixteen. He felt that it was not possible to eliminate dead-end jobs, but that the State might use the period so occupied to assist youths to prepare for progressive employment. The President of the Board of Education and the Minister of Labour were working together on this and allied problems. Industry had to recognise that the early years of a young worker were essentially years of training. In common with many other speakers he paid tribute to voluntary youth organisations in this country. In withdrawing his motion, Lord Southwood was justifiably satisfied with the course the debate had taken.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

War Advance Claim by Senior Railway Staff

Feb. 16

To the Editor of The Railway Gazette

Sir,—I was gratified to see that you have thrown down the gauntlet on behalf of the senior railway staff. Although not yet one of them, I am nevertheless approaching that category and would put in a word for those whose salaries are between £351 and £500. Unlike your statement on page 131 of February 5, payment for overtime and Sunday duty is *not* made to men earning over £350, at any rate not on the Great Western. As this category includes senior technical grades who have to supervise Sunday work, it is galling to them to have to put in so many of their supposed days of rest in unpaid work. They do, of course, get the war advance.

Another bone of contention, at the present time, is that many in senior grades are officially acting as divisional assistants and taking the full responsibilities but without the corresponding salary. This seems to conform to the general low standard of wages paid to the technical staff, which is never greater than two thirds of the salary for an equivalent post in any well run industrial concern. I confirm that there is much feeling among the individuals affected, and even though they may be few in number, that is no reason why these key men should not have commensurate treatment for work performed.

G.W.R. CIVIL

Feb. 17

To the Editor of The Railway Gazette

Sir,—A point not yet raised by your correspondents is worth noting.

If railwaymen cannot be regarded as Civil Servants, then, as the railways are Government controlled, surely the staff should be treated on the same basis. It is common knowledge that all the railway companies do not pay alike for the same service rendered and some are getting such service at 25 per cent. discount.

Yours faithfully,

DISTRICT OFFICER

Feb. 20

To the Editor of The Railway Gazette

Sir,—May I be permitted to add to the correspondence you have received arising from your editorial article. It is not only in respect of the war advance that the senior salaried staff earning over £500 a year are penalised. As you probably know, the administrative staffs of the railways are now working an extended working week and the R.E.C. has recently ruled that payment for overtime may be made to staff earning up to £500 a year. In addition, the committee has also authorised payment in lieu of holidays not taken during 1941 and 1942 to staff earning up to £500. In 1942 holidays were restricted to 12 days; the senior members of the staff are entitled to 18 days and in some cases even longer holidays.

The following are interesting comparisons:—

	£	£	£
Basic salary	450	500	550
War advance	41	41	Nil
Extended working week—8 hours overtime for 50 weeks	70	70	Nil
Payment in lieu of holidays (6 days) minimum	9	9	Nil
	£570	£620	£550

It will readily be seen that the relationship of basic salary to responsibility has ceased to have any logical significance.

One wonders why it is necessary to associate the railway staff with civil service practice. Practically all civil service departments have expanded considerably during the war with the result that the majority of the permanent civil servants have received promotion and increases out of all proportion to what would obtain in peacetime. In point of fact, many railwaymen have been seconded to the Ministries at increased salaries. There has been no such expansion on the railways; instead, there has been a constant decrease in staff, throwing more and more work on the older and senior members of the staff. In any case the practice is not consistent; whereas the war advance for civil servants ranges from 13s. 6d. a week to 7s. 6d. a week for staff earning up to £250 and £500 respectively, the railway staff receive a flat rate of £41 12s. or 16s. a week for staff earning up to £500 per annum.

It looks as if the Government is exercising its "non-inflation" policy on the unfortunate salaried man receiving over £500. Such a position bears unduly hard on the individual just over the border line; apart from the burden of income tax he has to meet increased costs for everything, rates, light, heat, coal, food, clothing, school fees, etc. He no longer has a margin and if the Government continues to acquiesce in the present illogical distribution of increases in earnings, the tendency to inflation will completely swamp the lower middle man.

If the Government is adamant on the £500 limit, surely it is a domestic matter for the railway companies to adjust the earnings by a bonus payment (which should be made retrospective) to ensure equitable treatment.

Yours faithfully,

FAIRPLAY

Compound Locomotives

390, Wakefield Road,
Huddersfield. Feb. 19

To the Editor of The Railway Gazette

Sir,—Mr. P. C. Dewhurst's letter on page 163 of your February 12 issue, with its ingenious adaptation of the Vauclain principle in order to overcome the difficulties occasioned by large cylinders, certainly shows that a "full-size" British compound locomotive is not, after all, precluded by space limitations.

It is not true to say, however, that Mr. Dewhurst's system could be applied with cylinders in the longitudinal positions used in the G.W.R. 4-cylinder engines, because his lower cylinders would foul the rear bogie wheels by several inches even with the bogie in its central position. The same objection would apply to the L.M.S.R. "Princess" but not to the "Coronation" because, in that case, the outside cylinders are ahead of the rear bogie wheels.

Mr. Dewhurst states that "it is only necessary to have one set of valve-gear for each side of the locomotive," but French practice has long insisted on the necessity for separate valve-gears for high-pressure and low-pressure cylinders and one would hesitate to disagree with those who can show the compound locomotive at its very best.

Yours faithfully,

W. A. TUPLIN

Spare-Time War Work Scheme

10, Malbrook Road,
Putney, S.W.15. Feb. 18

To the Editor of The Railway Gazette

Sir,—We read your article concerning the spare-time activities of the Bank Officers' Guild with the greatest interest, and congratulate the guild on its enterprise. As Local Government Officers of many years' standing, and deferred indefinitely from military service, we also have felt the desire to put our spare time to better use, and would like to enlist your interest in a scheme which we believe to be of value.

We have a keen interest in, and some knowledge of, railway organisation and practice, and as transport is an important war industry, we were prompted to address letters to one of the companies offering our voluntary services in any suitable capacity on a part-time basis. The company could not see its way clear at the time to use us, but this was a year ago, and we are tempted to think that changed conditions may have modified the official outlook.

Briefly, our idea is that a corps of part-time workers, keenly interested in railway work, could be enrolled by the companies to augment their depleted staff. Such a body would lack the skilled knowledge born of experience, but, by its very nature, would have the enthusiasm which spells rapid education. It would, of course, be prepared to undertake any duties, and could at least release men from the less-skilled sections of the industry for work of greater importance. Finally, it should not be difficult to incorporate such a body into the organisation of wartime transport without disturbing the somewhat delicate susceptibilities of the trade unions, as it would be purely a temporary measure, designed to add weight to the punch of our war effort.

Thus, sir, we throw out the suggestion to you, in the hope that space may be found to give it publicity, for in so doing we feel that we may attract a weight of support sufficient to sway the interest of the railway administrators in its favour.

Yours faithfully,

C. L. LINDLEY

The author of the letter on "Agreed Charges," which appeared on page 186 of our February 19 issue, was Mr. H. R. Caulfield-Giles, and not H. R. Campfield-Giles as printed.

The Scrap Heap

In a recent month, 10,795,179 journeys were made by members of H.M. Forces and their dependants on the main-line railways.

* * *

L.M.S.R. freight engines worked 600,000 hr. more in 1942 than in 1941. Altogether, these freight engines spent 20 million hr. hauling goods and war weapons a total distance of 1,700 million wagon miles, equal to 68,000 times round the earth.

* * *

FROM THE LAND OF OUR OLDEST ALLY

Most remarkable effect of fuel shortage in Lisbon is the disappearance of the ubiquitous, incredible Lisbon taxi . . . those magnificently, but terrifyingly driven, noisy little vehicles, which used to sway and skid up and down the precipitous and narrow streets have practically disappeared. Only a few Diplomatic Corps cars are to be seen. Luckily, trams (British-owned) are very good and cover most of the town.

Germans are far less in evidence, though they have opened a vast new Travel Bureau. This gives the Portuguese a chance of going in to demand "two first class tickets to Stalingrad," and generally to tease them.—*From "The Evening News."*

* * *

Trams and trolleybuses in Rome are said to be so overcrowded that drivers refuse to stop at intermediate stations to take on more passengers. A determined man often overcomes this by hooking a stick in the rope of the trolley pole and so disconnecting the pole from the overhead wire, thus bringing the vehicle to a standstill. In the confusion the man clambers among the swarm of passengers already on the tram or trolleybus. "These scenes are taking place with deplorable frequency," says the *Tribuna*. "Tram and trolleybus operators have taken several offenders to court and they have been sentenced to imprisonment for a year."

"Are we in the station yet?"

[Reproduced by permission of the proprietors of "Punch"

* * *

The people of the United States owe a debt to the nation's railroads that will be most difficult to repay. After virtually relegating them to the status of a stepchild, they called upon the railroads immediately after the attack on Pearl Harbour to supply most of their transport needs. . . . The railroads last year did the greatest transportation job in the history of this or any nation. To the railroads fell the job of maintaining a steady flow of materials to war industries and then moving the weapons they produced to ports and training centres. Millions of men in the armed services had to be transported and essential civilian transport needs had to be met. The railroads have handled this enormous volume of traffic with remarkable efficiency. —*From the "New York Times."*

* * *

RUSSIAN RAILWAYS IN 1874

On August 27, the last section of the Landvarovo and Romny Railway was opened to the public, so that the whole of the line from Wileisk to Romny, a distance of 711 versts, is now completed.

On the Sebastopol Railway the rails have been laid as far as Sympheropol, so that it can be made use of by the imperial *cortege* on the approaching visit of the Russian Court to the Crimea.

Under date of July 30, a concession has been granted to Herr Bollmann, a German engineer, for laying down a horse railway from Ekaterinoslave to Nikopol. This will be a very useful piece of work, as it will facilitate greatly the carriage of goods and produce to the south, which is now seriously impeded by the rapids of the Dnieper. These will now be avoided by the new tramway, though it involves a transhipment of the goods.

On the Rostov and Vladikaukas Railway good progress has been made this summer, the earthworks being completed and the rails laid for half the distance. The bridges over the Rutan and Urup are in such an advanced state that they will be used for the conveyance of railway materials and workmen's trains in the course of this autumn.

Extracts from "The Railway News" of September 19, 1874.

* * *

WAGONS FOR VICTORY

Railway wagons, big and small,
Keep them moving, one and all;
So that Aces in the air
May have bombs for "over there."

Twenty-tonners, bolsters, too!
Don't delay them—load them through;
Keep the Navy on the move
Let them have the shells they love.

Twelve-ton wagons, standard stock,
Load them full, right choc-a-bloc,
To the Army in the field
Waiting for industry's yield.

Wagons filled with coal and coke
Laboured by the mining-folk;
Send them to the ports and ships,
Help to make some record trips.

British railways have their "Quints,"
Constructed from designers' prints;
Special wagons, these, and rare,
Naturally there's none to spare.

These are wanted for the steel
Produced with such intensive zeal;
Keep them moving on the track,
Speed them there, and urge them back.

"Macs" are worth their weight in gold,
For their loads are manifold;
Tanks and guns—whose calibre—
Blow the "Axis" in the air.

"Trestrols" too, deserve some mention
In these days of serious tension,
These convey the armour-plating
To protect the Naval rating.

"Imps" are wagons specially planned
Which concentrated loads demand—
Machinery and heavy weights,
Armoured tanks and other freights.

At "Weltrols," rail inspectors rage,
Their loads are often "out-of-gauge,"
With wisdom they should be employed
And never "out of course" decoyed.

Wagons big, and wagons small,
"Imps" and "Flatrols," "Macs" and all;
Keep them moving all the time
Until the victory bells do chime.

W. E. N.

Members of this Southern Railway works band take their instruments to work with them to entertain their fellow workers during their lunch hour. Above is seen a full band rehearsal with one of the new type freight locomotives in the background

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

UNITED STATES

A Railway Re-location

Another railway to be affected by one of the large barrage schemes now in course of execution in the United States is the Louisville & Nashville RR. The Tennessee Valley Authority is constructing a dam at Gilbertsville, Kentucky, and the L. & N. RR. is applying to the Interstate Commerce Commission for authority to construct three new sections of line, totalling in length 17½ miles, to replace lengths of track on the main line between Memphis Junction, Kentucky, and Memphis, Tennessee, which will be inundated when the dam is brought into use.

New Locomotives

The New York Central System is continuing to purchase locomotives of the new and powerful 4-8-2 mixed-traffic design, with 12-wheel tender, that was introduced in 1941. In February, 1942, an order was placed with the Lima Locomotive Works for 25 engines of this type, of which delivery is now beginning, and the N.Y.C. is now in the market for a further 25, making 50 in all. The Western Pacific has been authorised to buy six steam locomotives of the 4-8-4 type from the Lima Locomotive Works, of which delivery is expected in the first half of 1943, and from the Electro-Motive Corporation three twin-unit diesel-electric locomotives of 5,400 b.h.p. The steam engines will cost $210,530 each, and the diesels $506,350, a total Western Pacific expenditure of $2,800,000.

Tunnels on the Moffat Route

In many tunnels in the western states of America, where timber is abundant, it has been the custom hitherto, in tunnels which have required lining, to carry out this work with timber. A typical example is provided by the Denver & Salt Lake, a subsidiary of the Denver & Rio Grande Western Railroad, which by means of the 6¼-mile Moffat Tunnel line cut 175 miles of the distance between Denver and Salt Lake City, and provided a new east-west route of considerable importance through the heart of the Rockies. From Denver to Craig, Colorado, the D. & S.L. is 232 miles long; beginning at 5,170 ft. altitude, at Denver, it climbs in 50 miles to 9,238 ft., at the eastern portal of Moffat Tunnel, and falls again to 6,175 ft. at Craig. In addition to the 32,798 ft. of Moffat Tunnel, there are 51 further single-track tunnels with a total length of 23,838 ft., the individual lengths of which range from 62 to 1,727 ft. Moffat Tunnel, under construction from 1923 to 1928, originally was timbered, but was relined throughout with concrete between the years 1933 and 1936. Of the 51 other tunnels, which penetrate a wide range of rock formations, including porphyritic granite, pre-cambrian sandstone, gneiss, and talc, some have required timbering, in whole or in part, to prevent rock falls or to resist varying degrees of pressure; the total length so timbered is 11,490 ft. This timbering has stood up well especially in the shorter tunnels, but much of it was put in between 1903 and 1914, and now requires renewal.

Replacing Timber Linings with Concrete

In carrying out the original timbering of the Moffat-route tunnels, 12 in. by 12 in. timbers of untreated Oregon fir were used to provide sills, posts, and a five-segment arch; 3 in. planking of untreated Oregon pine was used for lagging; and the arch was faced with a tightly-boarded spark arrester of redwood. In some of the tunnels clearances are below the present Denver & Rio Grande Western standard, which calls for 22 ft. from rail to the underside of the crown of the tunnel lining, and a lateral clearance of 8 ft. from the centre-line of the track, which in some of the tunnels has as sharp a curvature as 7¼ ch. It has been decided therefore to undertake a complete relining programme in concrete, starting with the tunnels in which the deterioration of the present timber linings is the most advanced, and extending, it may be, over 20 to 25 years to obtain the full service life of the timber in the tunnels in which the condition of the linings still remains reasonably good. In general, the sills, which deteriorate the most rapidly, are replaced first with concrete footings, and up to midsummer, 1942, 2,793 ft. of sills had been renewed thus in concrete; in addition, 1,053 ft. of tunnel had been relined completely. Steel forms, in collapsible 10 ft. sections, are used for the placing of the concrete; these were cut from the 40 ft. forms used in relining the Moffat Tunnel, which would have been too long to be adapted to the curvature in many of the tunnels. Concrete is mixed in a portable plant outside each tunnel, from which it is pumped to the point where new footings are being laid in, or complete relining is in progress. Two gangs are used, one of ten men, which is sufficient for footing work alone, and a second of twenty men, which is used for complete relining, in which event the ten-man gang does a first shift of preparatory work. Each 10 ft. section of complete relining requires about 4 hr. of work.

Nemesis

A sentence of 20 years' imprisonment, with a fine of $10,000, was passed, on October 13 last, by the District Court of Memphis, Tennessee, on John E. Payne, a 32-year-old negro track labourer, for attempting to wreck the Panama Limited diesel streamline train of the Illinois Central Railroad on July 14 last. An account of this sabotage appeared in THE RAILWAY GAZETTE of December 4, 1942.

ARGENTINA

Substitute Fuels

In view of the shortage of motor fuel, the feasibility of employing a substitute, composed of a mixture of alcohol and petrol, is being studied by the Argentine authorities. A technical committee appointed by the Buenos Aires Provincial Government to study the question has reported in favour of the practicability of the scheme, which is stated to have given satisfactory results in Brazil and other countries. The report recommends the establishment of distilleries, for the extraction of power alcohol from maize, wheat, barley, potatoes, sugar, and other vegetable products, near existing petroleum refineries. It is claimed that this would result in considerable economies in working costs, as the staff already employed, as well as the existing equipment, storage tanks, rolling stock, and so on, would be available for the service of both plants in each case. It is estimated that three distilling plants, erected as annexes to the petroleum refineries at La Plata, San Lorenzo, and Salta, would be capable of a yearly production of 300,000,000 *litres* of power alcohol. Besides contributing towards the solution of the fuel difficulty, this scheme would provide an advantageous method of utilising part of the unexportable maize surplus, the disposal of which during the last year or two has formed a serious problem for the Government, which has had to purchase the crop out of public funds.

A few days before the end of the 1942 Parliamentary sessions, a bill was sent to Congress by the Government providing for the construction of a number of distilleries for the manufacture of power alcohol from cereal products along the banks of the River Paraná, in the Province of Santa Fé, the centre of the cereal-producing zone. The cost is estimated at 24,000,000 pesos (£1,440,000); the yearly production aimed at 110,000,000 *litres*. The enterprise would be under the direction of the Ministry of Agriculture, assisted by a consultative board, appointed to advise on production costs and prices. Due to the late stage in the legislative year at which the bill was submitted to Congress, there was no time to deal with it, and the measure has been held over until the next session.

Another expedient which the Government is stated to have approved in principle is the use of linseed oilcake as industrial fuel for emergency purposes, in addition to the use of linseed oil, in combination with gas oil and diesel oil, as a liquid-fuel substitute.

Coal Exploitation

The question of developing Argentina's coal resources, to make good as far as possible the shortage of imports, continues to engage the attention of the Government, which is awaiting the report of a special committee appointed some time ago to study the matter. The coal-producing zones so far discovered are located mainly in the Provinces of San Juan and Mendoza, and the Territory of Neuquen, the potential output of which is stated to be considerable. In this connection, railway transport is an important factor; and it is stated officially that the Government is prepared to invest between 40,000,000 pesos (£2,400,000) and 50,000,000 pesos (£3,000,000) in the construction of lines for the transport of coal, if, in the opinion of the experts, production prospects are favourable enough to justify this expenditure.

BRAZIL

New Sorocabana Train Service

In accordance with instructions issued by the National Department of Railways, and in combination with the Viação Ferrea do Rio Grande do Sul, the Sorocabana Railway has placed in operation a weekly train service between Santana do Livramento and São Paulo. The train in question is composed of a Pullman car, with accommodation for 35 passengers, a restaurant car, and three sleeping cars, and is scheduled to leave São Paulo every Sunday at 11.45 a.m. and to arrive at Santana do Livramento on Wednesday at 9.40 a.m. On the return journey it is booked to leave Santana do Livramento at 7.30 p.m. on Wednesdays and to arrive at São Paulo at 6.35 p.m. on Saturdays. The through fare, with a right to the carriage of 60 kg. of luggage, is 525 milreis. Low beds for the three nights cost 105 milreis, and high beds, 75 milreis. In addition to the fare and the price of sleeping accommodation, a charge of 135 milreis is made for nine meals served in the restaurant car.

Railway Construction in Great Britain under War Conditions

Abstract of a paper read before the Railway Engineering Division of the Institution of Civil Engineers on February 23, by Mr. A. S. Quartermaine, M.C., B.Sc. (Eng.), M.Inst.C.E., Chief Engineer, Great Western Railway

Railway construction in Great Britain during the war has involved variations from normal practice in several respects, and it is the object of this paper to describe some of these and to give examples of works undertaken under war-time conditions. The works referred to were carried out on the Great Western Railway. In general, the principal features affecting the works have been: speed of construction; minimum interference with traffic; and restricted supply of labour and some materials.

Railway Requirements

The demands which had to be met consisted principally of:—

(1) New lines.
(2) Doubling or quadrupling existing lines.
(3) Provision of long running loops.
(4) Short loops on single and double lines.
(5) New or enlarged marshalling yards and locomotive depots.
(6) Connections to all kinds of factories and depots, with loops and reception sidings.
(7) Halts and platforms to deal with passenger trains to factories.

The new lines have been laid for the purpose of providing shorter alternative routes or for serving factories some distance from the railway. The quadrupling of double lines, or the doubling of single lines and the provision of running loops, or short passing loops, have been needed on account of the existing facilities being insufficient to meet the increases of traffic due to war conditions or the construction of factories in new areas. New marshalling yards have been due to concentration of traffic at unusual points and to the need for facilitating the marshalling of trains and their subsequent passage to their destinations by speedier routes than *via* existing marshalling yards.

Preliminary Work

In normal times it is usual for new lines, the doubling or quadrupling of existing lines, the provision of loops, and so forth, to be the subject of consideration for some time—possibly a year or more—before the works are finally authorised. During this period alternative proposals are investigated, the location is settled, cross sections for earthwork are taken, and approximate details of constructional works, such as bridges, are prepared, so that a reliable scheme and estimate are available before the engineer is authorised to put the work in hand. In addition, in most cases it is necessary to obtain Parliamentary powers for the acquisition of land, widening of bridges, diversion of roads, and similar matters. In the process of these investigations time is available for designing the works in a way which not only enables the engineering features to receive full consideration but also permits the requirements of all departments to be settled so that major alterations do not subsequently arise. When new bridges have to be built, or old ones lengthened, and roads constructed or diverted, the requirements of interested authorities are frequently determined by the Act of Parliament under which the works are being constructed. In other cases, negotiations proceed at an early stage so as to enable the contract plans to be prepared with full knowledge of the requirements, if practicable.

Wartime Procedure

Under war conditions the procedure has been very different. Although cases have occurred where the doubling or quadrupling of existing lines had been under consideration before the war, it was more frequently the case that the additional rail facilities, consequent on the war, arose at short notice and no previous scheme of a similar nature had been contemplated. When routes were becoming overloaded, or the known future traffic demands showed that they would be unable to deal speedily with the number of trains contemplated, the engineer was faced with a sudden request to say whether it was practicable to improve the facilities by constructing additional lines, loops, or yards, and to estimate the time and cost involved. The need was for speed and for an immediate answer as to the practicability of the project, followed by plans and estimates of cost and time, and, subsequently, the speediest possible execution of the work.

One visit to the site was usually sufficient to decide the practicability and, very approximately, the time required, and, if the scheme was seriously considered, this was followed quickly by small-scale plans or diagrams, with estimates based on very approximate quantities. In some cases on this information the scheme was approved in principle and a proposal which had been suggested for the first time, possibly only a few weeks previously, was authorised and progress was desired at once. If the work was small enough to be undertaken by the company's men a start could often be made immediately, but with the many works in hand for all Government departments, and the limited number of railwaymen available, it was usually necessary to carry out works of any magnitude by contract. This inevitably caused some delay, as contract plans, quantities, and specifications were needed to enable contractors to tender. There was seldom time to prepare a set of accurate quantities, and contracts were based on a priced schedule of approximate quantities. Some contracts were let for the main items only, such as fencing, excavation, and drainage, thereby enabling the contractor to make an immediate start. This was followed up by bridge and other structural drawings, sometimes in two stages, the first stage giving the bare information required to start the work and the second the complete detailed drawings. Where fabricated steelwork was involved, the earliest opportunity was taken of letting a supply contract for this independently of the main contract.

Location

So far as the author was concerned, new lines were few in number, and the longest 1¾ mile; in all cases the location had to be made without previous knowledge of the site. The doubling and quadrupling of lines was more extensive, the longest length being 17 miles. In quadrupling, the extra lines were placed either one on each side of the existing lines, or both on one side if less work was entailed by this arrangement. A similar procedure was adopted in constructing loop lines. Normally these were provided by widening out on the side on which they were needed, but where earthwork or structural difficulties could be overcome more easily, the widening was carried out on the opposite side and the running lines were slewed to make room for the loop. In order to reduce the amount of construction work additional running lines, which normally would have been spaced 11 ft. from the adjacent lines, were laid in at 8 ft. spacing, except at the terminating points where the full 11 ft. of space was required for signals. It appears desirable to consider the continuance of this practice after the war. In some circumstances it was found advisable to lay additional lines outside existing telegraph-pole routes and side drains or streams where the adjacent land was only a few feet above or below formation-level, as this avoided moving long lengths of telegraph wires and poles and reproducing streams, and enabled an earlier start to be made.

Land

As no time was available for preparation of accurate plans in advance, in many cases a decision as to the exact area of land required could not be made until the work was about to begin. When this occurred in open country arrangements were made for the land to be entered and for a temporary fence to be erected outside the probable requirements, so that work could proceed unhindered. As soon as the correct land requirements were known, the permanent fence was erected on the proper boundary and the purchase price was settled subsequently. It was found that the speediest method of acquiring the land was by private negotiation in preference to requisitioning, except for the very few cases in which owners proved difficult. Although, so far, about 700 owners and occupiers have been involved, requisitioning has been necessary in only about 2 per cent. of the cases.

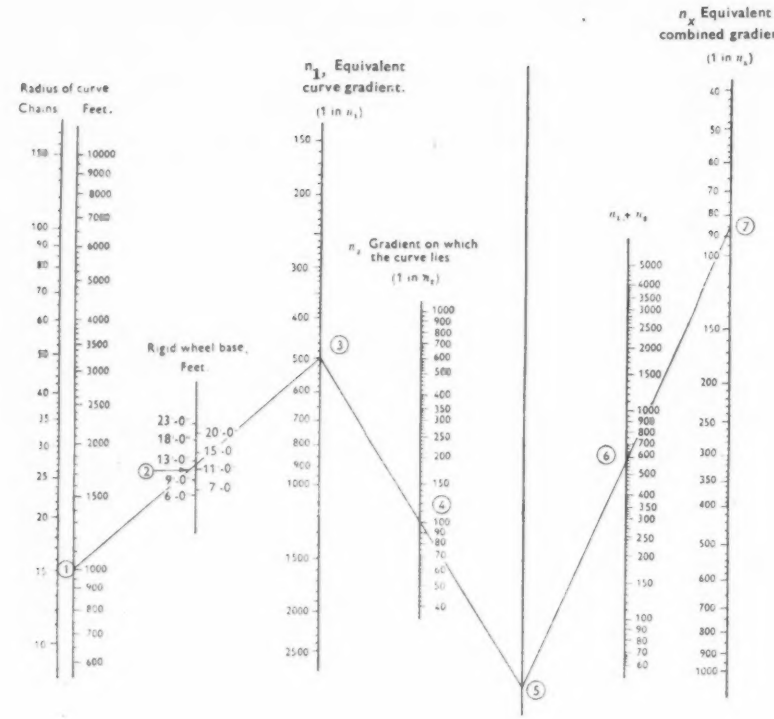
Earthworks

In constructing a railway, it is usual to pay proper attention to the need for balancing the earthwork as far as practicable, and this point was given full consideration in new lines. It was found, however, that in the case of widenings, where the length of construction-time was likely to be affected adversely by long leads, it was better to make full use of borrowing or spoiling at the site, provided the adjoining land consisted of open fields of no special value, the ground for borrowing was composed of suitable material, and the banks not unduly high. Although the desirability of balancing earthwork or disposing of surplus excavation from other works was not ignored, it was abundantly proved in many cases that not only were borrowing and spoiling quicker, although employing far less labour, but also this procedure often effected a saving in cost.

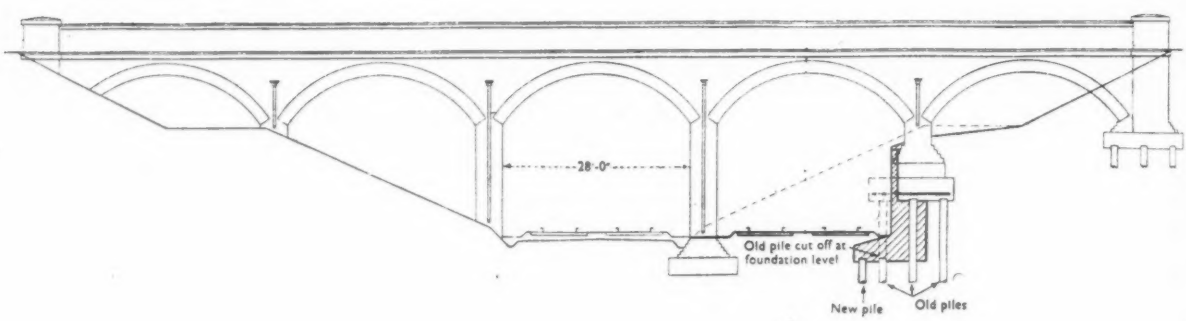
Quadrupling

In a length of quadrupling 4¾ miles long, the highest bank being only 15 ft. and the deepest cutting 16 ft., in order to avoid long leads and expedite completion, 46,000 cu. yd., out of a total of 100,000 cu. yd. of earthwork, was carried out by borrowing and spoiling at the places where the filling and excavation were required. Mechanical plant, principally dragline excavators, was used throughout. In another case of 3¼ miles of quadrupling, where the deepest cutting was 31 ft. and the highest bank 44 ft., the cuttings were excavated and the

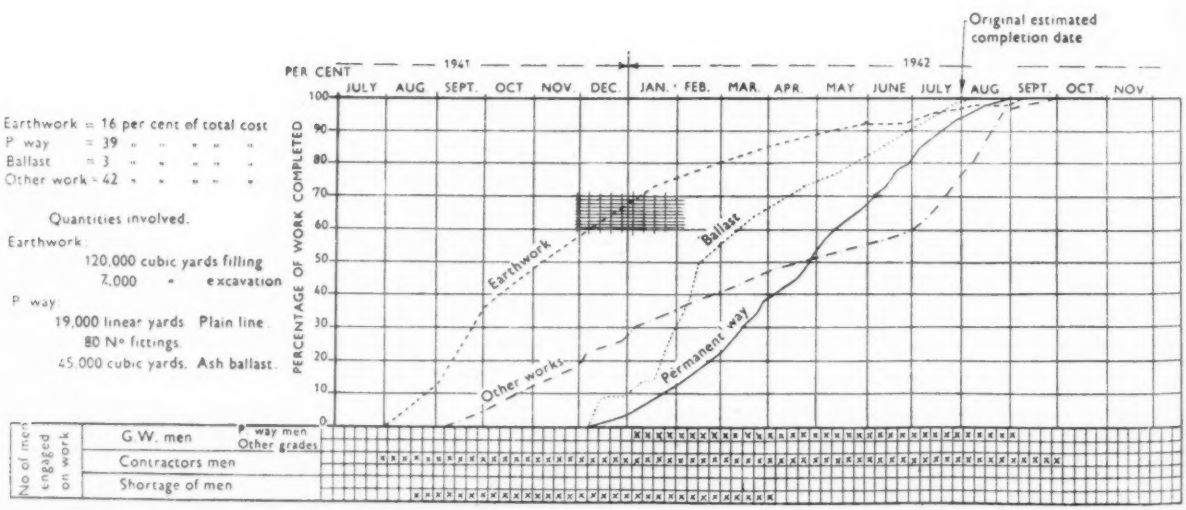
Railway Construction in Great Britain in Wartime



Left: Nomogram showing at a glance the equivalent grade on the straight for any given grade and curve



Below: Example of partial underpinning of a pier carried on piles to make provision for two additional lines under an existing bridge



Earthwork = 16 per cent of total cost
P way = 39 " " " " "
Ballast = 3 " " " " "
Other work = 42 " " " " "

Quantities involved.

Earthwork:
120,000 cubic yards filling
7,000 " excavation

P way:
19,000 linear yards Plain line.
80 N° fittings.
45,000 cubic yards. Ash ballast.

Diagram of progress of work, men employed, and shortage of labour

banks were formed, by a variety of methods, none of which entailed occupation of or interference with the running lines. Of a total of 187,000 cu. yd. of excavation, 79,000 cu. yd. was removed by dragline excavators working on top of the principal cuttings and loading into 12-cu. yd. side-tipping wagons on a 4 ft. 8½ in.-gauge temporary track laid from the top of the cuttings to the embankments.

BORROWING AT SITE.

SPOILING AT SITE.

Loops

The provision of loops called for special consideration of the earthwork problem in view of the need for speed and avoidance of running-line occupations. One work involved the construction of up and down loops for a length of 1 mile in a cutting with an average depth of 25 ft., and a maximum depth of 41 ft., there being no embankment at all. To meet the circumstances, the widening was undertaken on the upside only; two additional lines were laid on this side and the existing two main running lines slewed at each end to flat curves of 200 ch. radius to enable one of the additional lines to form the new up loop and the other the new up main line. The old main lines then became the down main and the new down loop. Instead of constructing a retaining wall and removing the material in front of this, the cutting was completely excavated to the full width required on the up side. The bulk of the excavation was carried out by dragline excavators working on top of the cutting and dumping the material on to the strip of land adjoining; in addition, scrapers were used until the winter weather made the clay too soft for them to operate. The total quantity of excavation carried out was 177,000 cu. yd. Five dragline excavators were used. The largest, a No. 55 Ruston-Bucyrus with a 2-cu. yd. bucket and a 70-ft. jib, had a six-cylinder diesel engine of 175 h.p. and a working weight of 81 tons. This operated from the top of the cutting at the deepest part and averaged about 60 cu. yd. an hr. Although the machine could handle a large quantity of material, the bucket was somewhat heavy for the work and cut grooves in the rather soft clay, necessitating much subsequent hand trimming. A No. 32 Ruston-Bucyrus, with a 1-cu. yd. bucket, a 40-ft. jib, an 80-h.p. engine, and a weight of 32 tons, proved the most efficient.

Marshalling Yards

In the construction of a new marshalling yard covering 23 acres, with a further 1½ acres for the loops leading to it, 97,000 cu. yd. of filling was required; the average depth was about 3 ft. The ground consisted of a layer of clay about 5 ft. thick, overlying a substratum of sandy gravel, and it was decided to obtain the necessary filling by borrowing all round the outside of the new yard. The site, which was roughly level, was subject to flooding in the winter, and some parts were flooded while the work was in progress, but in summer the water-level was from 1 to 3 ft. below ground. Although the clay would doubtless have been sufficiently satisfactory for some of the filling, it would have been impracticable to work the tipping wagons over such dumped material, or for the bulldozers to operate on it for spreading and levelling. Inevitable delays would have occurred as the wagons and bulldozers became bogged in the clay excavated from the water-filled borrow-pits. Accordingly it was decided to dump the clay on the side of the borrow-pits and to use only the sandy gravel for filling, ultimately returning the clay to the borrow-pits. This arrangement proved satisfactory and, as the gravel went down firmly, no undue trouble was experienced with dumpers, tractors, or bulldozers, and the work proceeded in the winter without stoppage for wet weather. The dumping of the clay involved a further 39,000 cu. yd. of excavation, but was justified by the uninterrupted progress which resulted.

Doubling

An example of the more normal method of transporting excavation from railway cuttings to form railway embankments arose in connection with the doubling of 17 miles of single line where absolute occupation of the line was obtained during daylight hours. Here the excavation from the cuttings was loaded by mechanical shovels or skimmers into screw-over side-tipping railway wagons which were run to the site of the embankments and tipped.

New Lines

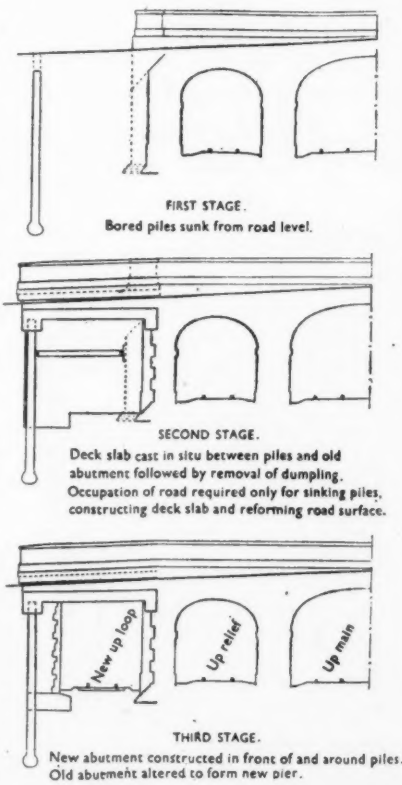
The usual method of carrying out earthwork for railway construction was adopted in most of the new lines; the excavation was run from the cuttings to the banks, either by contractor's standard-gauge wagons, tipping lorries, dumpers, scrapers, or Jubilee wagons. In the case of the line 1¾ miles long, where 130,000 cu. yd. of excavation in cutting, nearly half rock, was run to embankment, the average lead was about ¾ mile. As the country was rather hilly, standard-gauge temporary track was not used and the greater part of the material was transported by 2 ft.-gauge line consisting at the peak of 1½ miles of double track worked by 18 petrol locomotives and 200 Jubilee wagons. The remainder of the material was transported by scrapers and dumpers. The quantity of excavation on the various works amounted to 1¼ million cu. yd.

Bridges

The approximate number of new bridges, or additional spans to existing bridges over or under the new lines, has been 150, in addition to which about 100 culverts have been constructed or lengthened. Most of the bridges were quite simple, with brick or concrete abutments and arch, steel, or reinforced-concrete superstructures. At one bridge it was necessary to carry six lines over a stream which in summer was 15 ft. wide but in flood required a total opening of 58 ft. The general sub-surface water-level was 1 ft. to 3 ft. below the ground. The highest flood water-level had reached to within 18 in. of rail-level and constructional depth of the bridge superstructure had to be reduced to the minimum. The bridge was constructed in reinforced concrete with four spans of 14 ft. 6 in. each, on a floor of 1 ft. 6 in. over an area of 70 ft. by 80 ft. To avoid pile-driving for the two abutments and three piers over a total length of 400 ft., the subsequent construction of cofferdams, and to speed up excavation over the site, the bridge was built on a foundation spread over the whole area. Simultaneously with the excavation, tubes were sunk around the perimeter of the site, and the water was lowered by pumping to a level which enabled the foundation raft of reinforced concrete to be laid in the dry. While the water-level was thus kept down, the abutments and piers were constructed, after which the water was permitted to resume its normal level. In the case of an underbridge to carry slow goods traffic, where the available constructional depth was small, pre-cast concrete beams were used and the chairs were bolted direct to the concrete, only a thin felt pad being inserted. A somewhat similar method of fixing chairs to concrete deck slabs laid across rail bearers has been employed for some years, with apparent success, for fast traffic on the Canadian National Railways, but the author has had no experience of this practice. It remains to be proved whether the absence of the cushioning effect of timber sleepers and ballast, or of longitudinal sleepers, will result in damage to the concrete beams or difficulty in maintaining the chair bolts.

Road Traffic

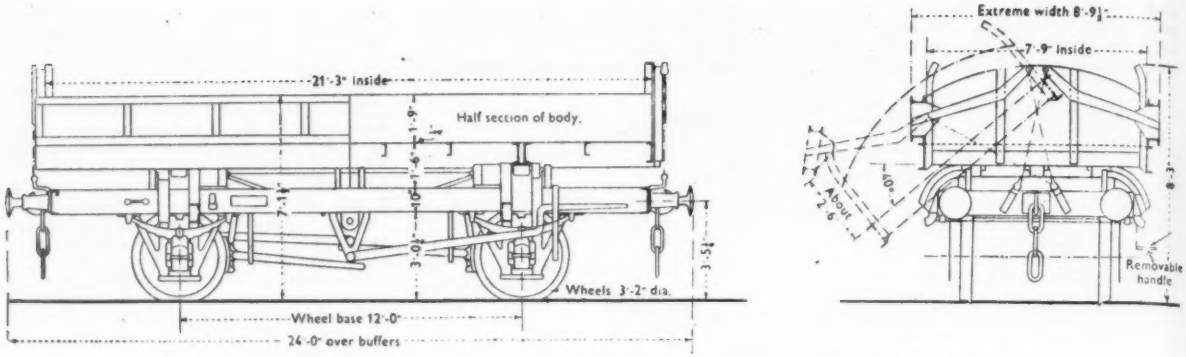
Most overbridges involved interference with road traffic, but the urgency and importance of the railway work justified



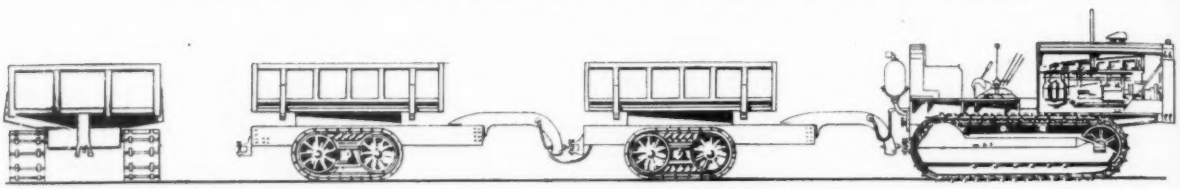
FIRST STAGE.
Bored piles sunk from road level.

SECOND STAGE.
Deck slab cast in situ between piles and old abutment followed by removal of dumpling. Occupation of road required only for sinking piles, constructing deck slab and reforming road surface.

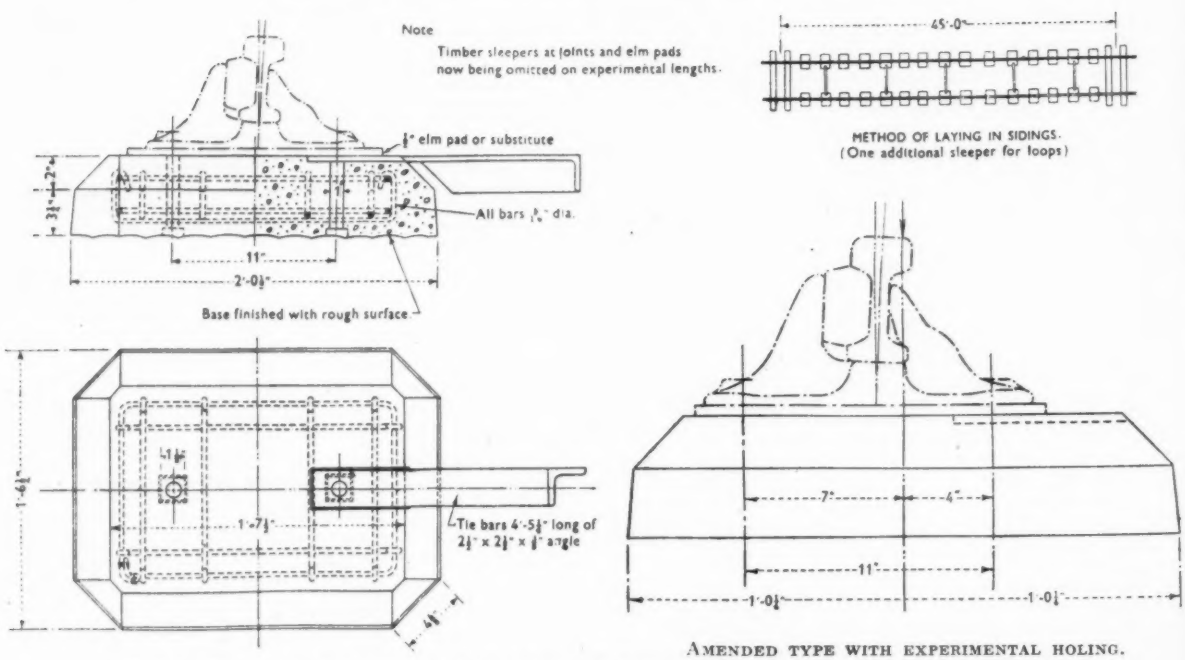
THIRD STAGE.
New abutment constructed in front of and around piles. Old abutment altered to form new pier.



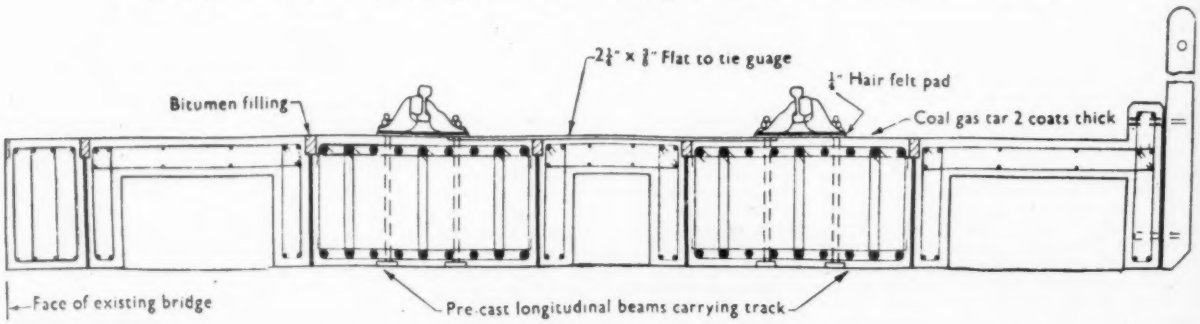
Metropolitan-Cammell Carriage & Wagon patented steel wagons used for rapid side tipping



Athey dump wagons hauled by D.8 tractors, all with caterpillar tracks



Design of concrete pot sleepers, original and amended type used for goods running lines and sidings


2½" x ⅜" Flat to tie guage
¼" Hair felt pad
Bitumen filling
Coal gas tar 2 coats thick
Face of existing bridge
Pre-cast longitudinal beams carrying track

Underbridge to carry slow goods traffic

Extension of steel superstructure

Extension of arch bridge

Example of widening of cutting on one side only

Excavation work on site of new line

Concrete underbridge for new railway

the granting of special facilities which would, in many cases, have been withheld in peacetime. On one length of quadrupling four bridges carrying unclassified roads over the railway were involved in a length of 2 miles, and to complete the lengthening of these on each side by the date required, it was necessary to proceed with all the bridges at the same time. The speediest way of carrying out the work was to divert all road traffic to other routes, and in this case the local authorities agreed to the closing of all four bridges at the same time.

An important Class A road, which might have been lengthened in two halves was the subject of special representation on account of the much shorter time necessary for carrying out the bridge-lengthening if the road were closed. It was agreed that the road should be closed provided the work were completed in a specified period, and the railway company was able to achieve this. It is to be hoped that the benefit to be gained by this procedure in suitable cases may not be forgotten when the need for haste due to the war is no longer the governing factor. Where structures carried roads of strategic or other importance which could not be closed it was as important to minimise interference with such roads as to complete the railway work as speedily as possible.

Temporary bridges could have been built, but the time required for their construction, as well as the labour and materials involved, rendered this procedure undesirable. A method of dealing with bridge extensions in such cases was to take occupation of half the road width and sink bored piles at the back of the new abutment line from the road surface to a sufficient penetration of the ground below rail formation level. A reinforced concrete deck slab was then constructed for this half of the road to form the new bridge spanning the distance between the old abutment and the new piles. When this was done and the concrete had set sufficiently, a waterproofing coat was applied and road material was laid over the deck slab, after which road traffic was permitted over this half of the bridge. A similar procedure was then adopted for the other half, and when these two operations were complete no further interference with road traffic occurred. Concrete was used for bridge superstructures in preference to steel, and arches, both square and skew, were usually built in concrete in preference to brickwork. Where new overbridges were required to carry light traffic pre-cast concrete structures were usually adopted.

Footbridges

Concrete footbridges were also provided; one was 364 ft. long over 20 tracks, consisting of running lines, loops, and sidings. It was desirable to erect only a few supports between the tracks, and this resulted in spans of up to 58 ft. in length. The piers were cast *in situ* and of dimensions suited to the steel shuttering available. The superstructure consisted of a single line of T-shaped beams, the top of which formed the footpath.

Underpinning

Several cases occurred of underpinning of abutments of three-span arch bridges when it was necessary to lower the ground-level through the side arches to provide for new loops. An example of partial underpinning of a pier already carried on piles arose in making provision for two additional lines under an existing bridge. The structure, which was of brick above foundation-level, consisted of five arched spans of 28 ft., carrying a main road over a railway cutting, the two existing lines passing through the centre arch. On investigation, it was found that the pier to be underpinned was carried on twenty-seven 14 in. by 14 in. timber piles in three rows of nine each. The base of the pier was some distance up the cutting slope, the bottom of which had to be removed to existing rail formation-level to allow for the two new lines, and the front row of nine piles had to be cut off to provide clearance for the new lines.

Bridge Demolition

A three-span masonry arched bridge, 15 ft. wide, carrying a disused road over the railway, the centre opening being a 30-ft. elliptical arch, had to be demolished. To avoid any appreciable interference with traffic, the removal of the whole of the parapets, spandrels, and backing was, as usual, undertaken from the top down to the extrados of the arches and the three arches themselves were subsequently blown up together during a short Sunday occupation. One main line was cleared for traffic in 1½ hr. and the other within 2 hr.

Permanent Way

For lines carrying heavy goods and passenger traffic new 95-lb. R.B.S. rails with new sleepers were provided, but 39-ft. rails rolled in America were used in many cases. For less important lines serviceable rails and timber sleepers were used, and for goods running lines and sidings serviceable rails and concrete pot sleepers were adopted, except on high banks where appreciable settlement was to be expected and serviceable timber sleepers were more suitable. The concrete sleepers proved very satisfactory except for a slight tendency to cant inwards, which caused a little tightening of the gauge. To remedy this, experiments are being made with chairs placed eccentrically on the pots so that the weight comes more on the outside. Serviceable timber sleepers were used at the joints, but that practice is being discontinued. Transverse concrete sleepers were not used, as they were not necessary for goods lines and sidings, and an acceptable design has not yet been evolved for passenger lines. New or serviceable crossing timber was used for crossing work.

General

The problem of housing and transport was often difficult, as men could seldom be obtained in sufficient numbers near the site. Railway coaches converted for sleeping and messing were used, and encampments were erected for the men as soon as possible in the case of the larger works. Temporary accommodation by means of camp coaches was provided for survey staff, who were also assisted by the provision of a car with utility body to enable them, with their instruments, to be transported quickly to the various sections of the works. The loss of technical staff to the Forces proved a source of difficulty at times, but this was offset to some extent by a variety of additional talent, including engineers of advanced age, others from various European countries, and girls with good school records who adapted themselves readily to technical subjects.

For all but minor works progress diagrams were kept on which were recorded weekly the progress of earthwork, structures, and permanent way, the numbers of company's and contractors' men employed, and the shortage of labour. In addition, the diagrams gave particulars of date of authorisation; target date of completion; estimate, with quantities of earthwork, permanent way, and major structures; priority numbers; Government department concerned; and name of contractor, if one was employed. A single-line diagram of the work was attached to each progress diagram. These records were very helpful in maintaining a check on progress and delays, and they proved invaluable in providing the necessary information for the various returns and reports required by the Government departments concerned.

TILLING & BRITISH AUTOMOBILE TRACTION LIMITED.—Formal notice is given to creditors of this company, now in voluntary liquidation, requiring them to send on or before March 26 their names and addresses, with particulars of their debts or claims, and the names and addresses of their solicitors, if any, to the joint liquidators, Messrs. Walter Edward Bennett, Geoffrey Hubert Walsh, and Robert Prentice, of Brettenham House, Lancaster Place, Strand, London. All known creditors of the company have been or will be paid in full.

Wintry weather in the Peak district. A view taken at the end of January

RAILWAY NEWS SECTION

PERSONAL

Mr. C. J. Selway, who was Passenger Manager, Southern Area, L.N.E.R., from 1923 to 1940, and Chairman, R.E.C. Passenger Committee, from 1938 to 1942, has accepted the invitation of the council of the Institute of Transport to fill the office of Honorary Treasurer of the institute, which was rendered vacant by the death of Sir Henry Maybury.

We regret to record the death on February 11, at the age of 82, of Mr. S. A. Pope, who was appointed to the then newly-created post of Commercial Assistant to the Superintendent of the Line, G.W.R., in 1908, and held that position until his retirement, in 1924, after 47 years' service with the company. Mr. Pope was born in Cornwall, and entered the service of the G.W.R. at St. Ives in June, 1877. After gaining a general knowledge of all branches of station working and accounts, he was transferred, in 1887, to the General Manager's Office, where, after being in charge of many of the sections, he became Personal Secretary to the then General Manager, Sir James Inglis. During his period in the General Manager's Office, Mr. Pope reorganised the company's bookstall and advertising arrangements, as well as initiating and developing many of the phases of railway publicity. His next appointment was that of Commercial Assistant to the Superintendent of the Line. On the formation of the Suggestions Committee in 1913, Mr. Pope was appointed Chairman, and held that position until his retirement. During the war of 1914-19 he was deputed by the then General Manager (Mr. Frank Potter) to represent transport interests on the Belgian Trade Committee. For many years he represented his company at the Railway Clearing House. He was the author of two well-known papers read to the G.W.R. Lecture & Debating Society, "The Cheap Trains Act of 1883," and "The Evolution of Travel." Mr. Pope had travelled extensively, and in 1906 he was sent on a special mission to the United States and Canada to examine and report on commercial methods in those countries. He had visited also South America and the Continent, as well as almost every portion of the United Kingdom.

The late Mr. S. A. Pope

Commercial Assistant to the Superintendent of the Line, G.W.R., 1908-24

Mr. J. B. Dunkley, Stationmaster, St. Pancras, L.M.S.R., who has been appointed District Passenger Manager, Birmingham, was born at Northampton in 1891, and entered the Goods Department of the former L.N.W.R. there at the age of 14. After nine years in that department at various stations in the Northampton and Rugby districts, he was transferred to the Traffic Department as Stationmaster at Hammerwich (Staffs), in August, 1914. In November of that year he was appointed District Relief Clerk at Birmingham, which position he held until December, 1920, excluding his period in the Army, during which he served in France with the Railway Operating Division, was awarded the French Croix-de-Guerre and was mentioned in despatches. On January 1, 1921, Mr. Dunkley was appointed District Check Clerk for the Birmingham District, and in February, 1922, was transferred to the District Superintendent's Staff office at New Street. After the amalgamation, he was transferred to the Chief General Superintendent's Office at Derby, and on November 1, 1925, was appointed Head Office Inspector (Staff), Chief General Superintendent's Office, Derby, which position he held until November, 1934, when he was transferred to a similar position at Euston. Mr. Dunkley was appointed Stationmaster, St. Pancras, on December 1, 1935.

Mr. J. B. Dunkley

Appointed District Passenger Manager, Birmingham, L.M.S.R.

Professor F. C. Lea, O.B.E., D.Sc., Wh.Sc., has been elected to be the next President of the Institution of Mechanical Engineers. He is a Director of Edgar Allen & Co. Ltd.

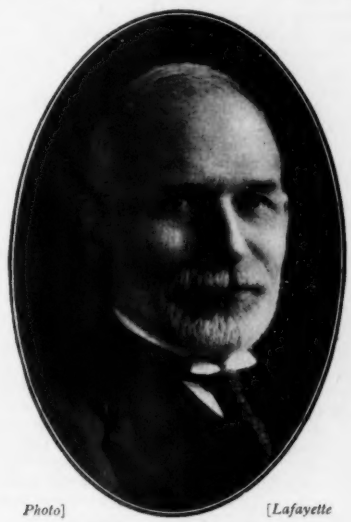
The committee of the Athenæum Club has elected the following gentlemen under the provisions of Rule II of the club, which empowers the annual election by the committee of a certain number of persons of distinguished eminence in science, literature, or the arts, or for their public services:—

Sir William Arthur Stanier, M.I.Mech.E., M.I.Loco.E., Chief Mechanical Engineer, L.M.S.R.; Scientific Adviser to the Minister of Production.

Sir Thomas Lewis, C.B.E., F.R.S., M.D., F.R.C.P., Director of Clinical Research, University College Hospital.

Sir Bernard Pares, K.B.E., lately Professor of Russian History, University of London.

Mr. J. T. Naisby, whose death was recorded in our February 19 issue, was Passenger Manager, North-Eastern Area, L.N.E.R., from 1927 until his retirement in 1932. He was educated at Morpeth Grammar School, and entered the service of the former North Eastern Railway, as a junior, at Morpeth Station. After a few years' training in the various sections of the Traffic Department at different stations in the Northern Division, he was transferred to the Divisional Goods Manager's Office, Newcastle, as Personal Clerk to the Goods Manager. In April, 1898, Mr. Naisby was appointed Chief Clerk to the District Traffic Agent at Carlisle, and, in October of the same year, joined the staff of the General Goods Manager at York. On the reorganisation, in January, 1901, he was given an important position in the newly-created General Traffic Manager's Office, and later was attached to the General Superintendent's Office. In October, 1905, he was appointed Dock Agent, Tyne Dock, and, on the retirement of Mr. Joseph Fairless, Mineral Manager, Newcastle, was transferred to the position of Assistant District Goods Manager, with special supervision of the heavy mineral traffic in that area and shipping at the various ports in the district. Mr. Naisby was appointed District Goods Manager, Middlesbrough, in January, 1914, and was transferred to Newcastle in the same capacity in 1923. He became Passenger Manager of the North-Eastern Area of



Photo] [Lafayette

The late Mr. J. T. Naisby

Passenger Manager, North-Eastern Area, L.N.E.R., 1927-32

the L.N.E.R. in 1927. Mr. Naisby was one of the early members of the Institute of Transport.

Professor Egbert Roger Hondelink, who has been elected Chairman of the Technical Advisory Committee on Inland Transport to the Allied Post-War Requirements Bureau, was born in 1890 at Dieren (Holland), and educated at Winterswyk High School and Delft Engineering University. He graduated in 1911 and joined the service of the Holland Railway Company, which he served in various capacities until 1921. After the war of 1914-19 he was concerned especially with international traffic and engineering development. In 1921 Mr. Hondelink went to China as Deputy Chief Engineer, and soon afterwards became Chief Engineer & General Manager, of the Lunghai Railway (Eastern Division), Chinese Government Railways. He came to England in 1926 and established his headquarters in London, as Consulting Engineer to international syndicates and Governments in connection with the planning, construction, and operation of communications generally. In this capacity he visited Australia and New Zealand, Ireland, Canada and the U.S.A., the Middle East, and the Far East, particularly China, Manchuria, and Japan. After ten years of this world-wide practice as a Consulting Engineer, Mr. Hondelink accepted the Chair of Transport Engineering & Economics at the University of Delft, but retained his home in England. He had actually left Holland for a visit to this country on the day before the German invasion, and was able to complete the journey, though with difficulty and by a circuitous route. Since then he has been engaged on war work for the Allied nations in an advisory capacity on various aspects of transport, and in October, 1942, was elected Chairman of the Technical Advisory Committee on Inland Transport to the Allied Post-War Requirements Bureau, to the work of which we refer in an editorial article, page 208. Professor Hondelink has been a regular contributor to THE RAILWAY GAZETTE for upwards of twenty years.

Sir W. Reardon-Smith has been elected a Director of the Great Western Railway Company.

Mr. A. E. Butler, Assistant Stationmaster, Paddington, G.W.R., has been appointed Chief Clerk, Divisional Superintendent's Office, Paddington, *vice* Mr. T. E. Prior, who is retiring, with effect from March 31.

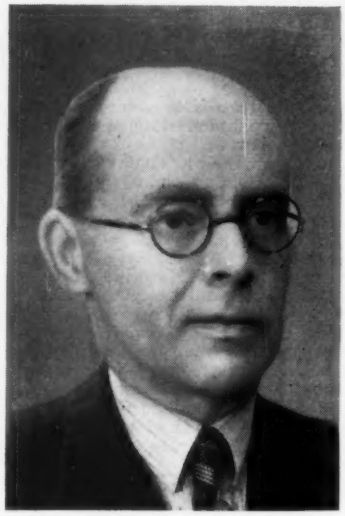
Mr. O. Cecil Power has been appointed a Director of the Birmingham & Midland Motor Omnibus Co. Ltd. He has been connected with the business and its predecessors since 1899, and was appointed Traffic Manager in 1902, a position he still retains.

L.M.S.R. APPOINTMENTS

The L.M.S.R. announces the following appointments :—

Mr. W. H. Hamlyn, Assistant (Architectural), Chief Engineer's Department, Watford, to be Architect, Chief Engineer's Department, Watford.

Mr. A. P. J. Ball, Divisional Land & Estate Agent, Glasgow, to be Assistant Estate Manager, Watford Headquarters, *vice* Mr. W. H. Roberts, promoted.



Professor E. R. Hondelink

Chairman, Technical Advisory Committee on Inland Transport, Allied Post-War Requirements Bureau

Mr. J. B. Faulkner, Head of General Section, Estate Manager's Office, Watford Headquarters, to be Divisional Land & Estate Agent, Glasgow.

Mr. R. Hunter, District Goods & Passenger Manager, Motherwell, to be District Goods, Passenger & Docks Manager, Barrow, *vice* Mr. F. K. Rogers, retiring.

Mr. C. J. Vidal, District Controller, Chester, to be District Goods & Passenger Manager, Motherwell.

Mr. F. H. Fisher, Divisional Controller (Passenger Services), Office of Divisional Superintendent of Operation, to be District Goods & Passenger Manager, Swansea, *vice* Mr. C. H. Tait, retiring.

Mr. W. B. Carter, Head of Goods Revenue Section, Chief Commercial Manager's Office, Watford, to be District Goods & Passenger Manager, Northampton, *vice* Mr. H. Hauxwell, retiring.

Mr. J. B. Dunkley, Stationmaster, St. Pancras, to be District Passenger Manager, Birmingham, *vice* Mr. G. R. Bradbury, retiring.

Mr. H. B. Taylor, Assistant (Freight Services Section), Chief Operating Manager's Office, Watford, to be Divisional Controller (Freight Services), Office of Divisional Superintendent of Operation, Manchester, *vice* Mr. E. Towneley, retired.

Mr. S. H. Gould, Assistant Divisional Controller (Passenger Services), Office of Divisional Superintendent of Operation, Crewe, to be Divisional Controller (Passenger Services), Office of Divisional Superintendent of Operation, Crewe, *vice* Mr. F. H. Fisher, promoted.

Mr. A. E. Gaudern, Signal-Sighting Assistant, Chief Operating Manager's Office, Watford (located at Crewe), to be District Controller, Chester, *vice* Mr. C. J. Vidal, promoted.

Mr. I. C. Forsyth, Assistant, Office of Divisional Superintendent of Operation (Motive Power), Crewe, to be District Locomotive Superintendent, Plaistow, *vice* Mr. T. H. Mitchell, promoted.

Mr. A. E. Marriott, Assistant District Goods & Passenger Manager, Leicester, to be Assistant District Goods Manager (Commercial), Broad Street, *vice* Mr. G. W. Galloway, retiring.

Mr. R. M. Wells, Assistant to District Goods Manager, Leeds, to be Assistant District Goods & Passenger Manager, Sheffield, *vice* Mr. F. Taylor, retiring.

Mr. C. F. Beck, Goods Agent, Aston, to be Assistant District Goods & Passenger Manager, Leicester, *vice* Mr. A. E. Marriott.

Mr. W. Sinclair, Assistant District Passenger Manager, Birmingham, to be Assistant District Passenger Manager, Manchester, *vice* Mr. H. A. Pedley, retired.

Mr. E. L. Rowley, Assistant to District Goods & Passenger Manager, Sheffield, to be Assistant District Passenger Manager, Birmingham.

Mr. F. W. Booth, Assistant to District Goods & Passenger Manager, Chester, to be Assistant District Passenger Manager, Liverpool, *vice* Mr. P. S. Smith, retiring.

Mr. S. H. Dunn, Chief Staff Clerk, District Goods Manager's Office, Leeds, to be Assistant to District Goods Manager, Leeds, *vice* Mr. R. M. Wells, promoted.

Mr. A. E. S. Bayley, Assistant District Controller, Birmingham, to be Assistant to District Goods & Passenger Manager, Chester, *vice* Mr. F. W. Booth, promoted.

Mr. W. A. G. Suddaby, Assistant District Controller, Chester, to be Assistant Divisional Controller (Passenger Services), Office of Divisional Superintendent of Operation, Crewe, *vice* Mr. S. H. Gould, promoted.

Mr. G. H. Morris, Sub-Station & Track Engineer, C.M.E. & E.E. Department, Manchester, to be Resident Engineer, C.M.E. & E.E. Department, Manchester.

Mr. H. S. Webster, Leading Technical Assistant, C.M.E. & E.E. Department, Derby, to be District Outdoor Machinery Assistant, C.M.E. & E.E. Department, Crewe, *vice* Mr. W. M. Chambers, deceased.

Mr. J. A. McMullen, Assistant District Controller, Willesden, to be Assistant District Controller, Chester, *vice* Mr. W. A. G. Suddaby, promoted.

Mr. C. S. Drummond, Assistant District Controller, Stafford, to be Assistant District Controller, Willesden.

Mr. J. C. Rogers, Assistant District Controller, Leicester, to be Assistant District Controller, Leeds, *vice* Mr. W. B. Bachelor, transferred.

Mr. P. J. Fisher, Assistant District Controller, Rugby, to be Assistant District Controller, Chaddesden, *vice* Mr. H. S. Knott, resigned.

Mr. N. R. Peach, Assistant District Locomotive Superintendent, Kentish Town, to be Assistant District Locomotive Superintendent, Camden, *vice* Mr. T. Eaglesfield, promoted.

Mr. W. J. Legg, Assistant District Locomotive Superintendent, Shrewsbury, to be Assistant District Locomotive Superintendent, Kentish Town.

Mr. C. Cunliffe, Running Shed Foreman, Burton-on-Trent, to be Assistant District Locomotive Superintendent, Shrewsbury.

Mr. E. H. Homer, Goods Agent, Willenhall, to be Goods Agent, Oldbury, *vice* Mr. A. Sirman, retired.

Mr. F. Williams, Goods Agent, Brierley Hill, to be Goods Agent, Willenhall.

Mr. F. G. Hewitt, Stationmaster, Birmingham (New Street), to be Stationmaster, St. Pancras.

Mr. H. S. Turrell, Assistant Stationmaster, Crewe, to be Stationmaster, Coventry (also i/c Coundon Road), *vice* Mr. E. Barnett, transferred.

Mr. H. Limb, Stationmaster & Goods Agent, Pontefract (Monkhill), to be Stationmaster, Bury (Bolton Street & Knowsley Street), *vice* Mr. T. H. Davy, retired.

Mr. J. Perry, Stationmaster & Goods Agent, Mytholmroyd, to be Stationmaster & Goods Agent, Pontefract (Monkhill).

TRANSPORT SERVICES AND THE WAR—179

Furniture Removal Limitations

The Ministry of War Transport has decided that, from February 20, normal movements of furniture by road will be allowed within a radius of 60 miles from principal points. The Regional Transport Commissioners, however, may require that rail transport shall be used even for distances of less than 60 miles where the facilities are suitable. Permission for movements by road in excess of 60 miles will be granted only in exceptional circumstances.

Pooling of Railway Parcels Traffic

To cut down unnecessary cartage, pooling schemes for the collection and delivery of parcels have been introduced recently in various important areas. One example is provided at Bradford, where parcels traffic previously handled at Exchange and Forster Square Stations now is dealt with by the L.M.S.R. at the latter station. Similarly, at Stockport, all parcels traffic of the L.M.S.R. and the Cheshire Lines Committee has been handled, since January 4, by the former company.

Civilian Air Raid Casualties in January

The Ministry of Home Security has announced the following figures of civilian casualties due to air raids in the United Kingdom during the month of January :—

Killed (or missing, believed killed)	328
Injured and detained in hospital	507

The casualties are classified as follow :—

	Men	Women	Under 16
Killed (or missing, believed killed)	107	145	76
Injured and detained in hospital	180	225	102

Newcastle Local Transport

Further travel modifications in the Newcastle area were introduced on Monday, February 15. From that date buses of the O.K. Motor Service (E. Howe of Spennymoor), operating between Bishop Auckland and Newcastle, have been permitted to pick up passengers on the inward journey between Framwellgate Moor, Durham, and Newcastle. This service was begun in October, 1928. It is emphasised that the concession is a wartime measure. The fares under the new arrangement are the same as those charged by the Northern General Transport Co. Ltd.

L.M.S.R. Fuel Economy

So successful has been the L.M.S.R. experiment with a mixture of waste wood and coal for steam raising on locomotives, that it is now a standard practice at all the company's locomotive sheds. The mixture brings a locomotive into steam in almost the same time as coal. The whole of the waste wood from the company's carriage & wagon works, amounting to 6,000 tons per annum, is being so used, and an additional 20,000 tons has been purchased from outside sources. It is found that 2 cwt. of waste wood saves 1 cwt. of coal.

Important L.N.E.R. Train Service Alterations

Far-reaching changes in the L.N.E.R. day Anglo-Scottish service are announced to come into operation on March 1. Various alterations have been made from time to time since the war began in the stops made by these trains, in order as far as possible to equalise the loading as between train and train; the March 1 changes are more drastic than any previously made, and the omission of stops permits certain accelerations. The 9.50 a.m. from Kings Cross to Edinburgh will call in future only at Grantham, Darlington, and Newcastle, and will reach Edinburgh at 6.25 instead of 6.37 p.m.; the 10 a.m. Flying Scotsman will call at Peterborough, Grantham, York, Newcastle, and Berwick, the Peterborough stop replacing that previously made at Doncaster. In the up direction the 10 a.m. Flying Scotsman will call only at Newcastle, Darlington, and Grantham, omitting the Berwick and York stops; the 10.10 a.m. from Edinburgh to Kings Cross will call at Dunbar, Berwick, Newcastle, York, Doncaster, and Peterborough, omitting the previous stops at Darlington, Retford, and Grantham, though the Dunbar stop is additional, and will reach Kings Cross at 7.8 instead of 7.26 p.m. This is the first time since the war began that any passenger trains have been booked through York without stopping.

Contingent alterations include starting the 2.20 p.m. from Leeds and the 2 p.m. from Bradford to Kings Cross 40 min. later, at 3 p.m. and 2.40 p.m. respectively, with arrival at Kings Cross at 8 p.m. instead of 7.8 p.m. This retiming helps to spread the Leeds—London departures more evenly than hitherto, at 7.50 and 10.15 a.m., 1.10, 3, and 5.30 p.m., which is an almost exact reversion to the pre-war departures, with the omission, of course, of the streamline and Pullman trains.

From February 15 the 4.40 a.m. from Liverpool Street to Norwich has been altered to start at 4.33 a.m.; the 6.32 a.m. from Ipswich and the 6.41 a.m. from Clacton to Liverpool Street start at 6.22 and 6.34 a.m. respectively; and the 5 p.m. from Liverpool Street to Southend starts at 4.57 p.m.

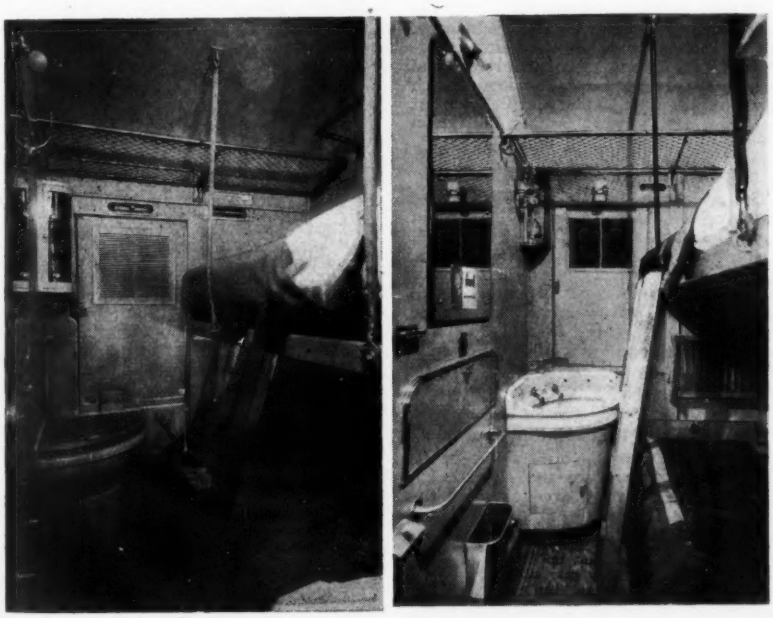
Planning Inland Transport

During the next few weeks those Government Departments which are large users of transport will be drawing up their forecasts of traffic movements for next summer. These seasonal forecasts cover the movement of many millions of tons of traffic of all kinds. They include all imports as well as internal movements of traffic, both military and civil, with which the Government Departments are concerned directly or indirectly, and movements of many commodities controlled under zoning schemes. Pieced together, the statements present a complete picture of the country's major transport requirements.

Twice a year, in the early spring and early autumn, the estimates go to the Central Transport Committee of the Ministry of War Transport, a body consisting of the heads of the internal transport divisions of the Ministry—Railways, Road Transport, and Inland Waterways, the Port & Transit Control, and the Coasting & Short Sea Division, together with representatives of the other Government Departments using transport. This committee was established in April, 1941, and its duty is to consider large transport requirements (immediate or prospective) of Departments, with a view to their co-ordination and allocation to the most suitable means of transport. The committee has the benefit of the advice of the Railway Executive Committee, and of the Statistical Division of the Ministry, which analyses and interprets the forecasts submitted by the Government Departments.

Apart from coal, the routing of which is decided by a special committee meeting at the Ministry of Fuel & Power, there is during the winter a number of exceptionally heavy movements, such as seed potatoes. The Central Transport Committee determines the proportions to be carried by rail and coastwise, and this winter, as last, coastal shipping has helped enormously in ensuring the safe delivery of the crop. Another big item in which coastal shipping is playing a vital part is home-produced timber.

Central planning is also being applied,



Interior views of new two-berth first-class sleepers, to which reference was made in our February 12 issue, page 173. The left-hand view is the L.N.E.R. arrangement, and that on the right the L.M.S.R.

to an increasing extent, to the movement of traffics of smaller volume. An example is the movement of tin plates from South Wales to Liverpool. Here again, the C.T.C. is concerned only with broad policy. The details are left to the operating divisions, the Area Goods Managers, the Regional Transport Commissioners, the Departmental Movement Officers, and the Transport Sub-Committees of the Port Executive Committees, which have detailed knowledge of the traffics to be moved and of the transport available from hour to hour.

The C.T.C. is also responsible for eliminating waste and securing economies in the use of transport. It has already initiated many measures for avoiding cross hauls and unnecessary long hauls. Government Departments are co-operating with the Committee by insistence on the use of local products, and the saving in ton-miles already achieved has been very substantial. The zoning of distribution has progressed rapidly. The sector scheme, introduced by the Ministry of Food, now covers more than 90 per cent. of the grocery and provision trade. Other schemes have secured substantial economies in the transport of such commodities as cereals, flour, meat & livestock, biscuits, fruit, vegetables, and fish.

Road Vehicle Markings

An Order of the Minister of War Transport, which came into force on January 17, and is called the Road Vehicles (Functional & other Marks) Order, 1943, provides that no person shall use on a highway any vehicle on which is displayed any marking specified in the following schedule, or any marking or device which might reasonably be mistaken for such marking, unless its attachment to the vehicle is duly authorised by the aprpopriate committee :—

Marking	*Authority who may authorise the Marking*
1 A fouled anchor and a letter	Admiralty.
2 A broad arrow surmounted by the letters "WD."	Secretary of State for War.
3. A roundel consisting of a circular red spot on a white ground enclosed in a blue circle.	Secretary of State for Air.
4. A yellow triangle on which is superimposed a black triangular band enclosing a letter or group of letters in black.	Minister of Home Security.
5. A label on which appears an oblong band enclosing the Royal Arms, the letters "EL" and the identification letter(s) and number of the label.	Minister of Home Security.
6. A label on which appears the word "PRIORITY," surmounted by a crown and the identification number of the label.	Minister of Home Security.

Travelling Canteens for U.S. Troops

The American Red Cross (unlike its British counterpart) includes more than first aid and hospital services. It organises canteen services, welfare work, and squads of travelling canteens for lonely outposts, very much as the Church Army, Y.M.C.A., and Salvation Army work for the British Serviceman and woman. Some of the remoter parts of Great Britain where U.S.A. troops are working are to be served by 40 former Green Line coaches, which have already been used as ambulances. These vehicles, which are called "clubmobiles," have a kitchen fitted up for serving coffee and doughnuts, besides other less popular forms of light refreshment. A library of books and records is carried besides a radio set, and packets of cigarettes. The service is free. A special cabin at the back of the kitchen is fitted up for the use of the three girls who run the clubmobile. The first of these vehicles to enter service is named the *Pennsylvania* and is handled by a driver borrowed for the duration from London Transport. This man has taken a special course to qualify him for cross-country runs and any climatic conditions, however eccentric. When we viewed this vehicle recently, we were impressed with its compact efficiency.

Petrol Cuts in Eire

Further reductions in transport petrol allowances in Eire will come into force on March 4.

G.N.R. (Ireland) Train Services

Considerable alterations to main-line train services are indicated in a new timetable issued by the Great Northern Railway of Ireland and operative from February 1. On the main line between Dublin and Belfast the new Eire customs arrangements for examination in the trains while *en route* have enabled the lengthy Dundalk stops to be cut on most trains to 5 min., but the time thus saved on some trains is more than offset by lenthened running times and longer stops at other stations. The 9 a.m. from Dublin to Belfast arrives at 12.10 instead of 12.20 p.m. ; the 2.45 p.m. now leaves Dublin at 2.30 p.m., and reaches Belfast at 5.55 instead of 6.5 p.m. ; the 6.40 p.m. leaves at 6.15 p.m., and is due at 9.30 instead of 10.5 p.m. In the southbound direction the 8.35 a.m. from Belfast starts 5 min. earlier, and reaches Dublin 5 min. earlier, at 11.50 a.m. ; the 12.15 p.m. is due at 3.35 instead of 3.30 p.m. ; the 5.40 p.m. arrives 10 min. later, at 9.5 p.m. Part of this last deceleration is due to carrying a special Warrenpoint portion on the 5.40 p.m., which is run ahead independently from Portadown, and reaches Warrenpoint at 7.3 p.m., an acceleration of 24 min. on the previous service. On the Belfast-Derry line the 11.25 a.m. starts at 11.15 a.m., the 5.15 p.m. at 4.45 p.m., and the 7.30 p.m. at 7.5 p.m. ; the 8.45 a.m. is slowed 15 min., to a 3 hr. run, the 4.45 p.m. 5 min., and the 7.5 p.m. 40 min., now taking 3 hr. 25 min. From Londonderry the 7.20 a.m. starts at 7.15 a.m., and the 6.55 p.m. at 6.25 p.m., but the latter arrives in Belfast only 5 min. earlier, at 10.25 p.m. ; the 7.15 a.m. is slowed 10 min., and the 10.15 a.m., 12.15 and 3.45 p.m. 5 min. each.

There are still five daily buffet car services in each direction over this route, and three buffet or restaurant car trains each way daily between Dublin and Belfast, but the buffet cars between Belfast and Cavan have been withdrawn.

New Hungarian Main Line

The new main line between Saratel and Deda, of which we gave details and a map in our issue of July 17, 1942 (page 69), is now stated to be nearing completion. It has been announced officially in Hungary that 141,000 wagon loads of materials and equipment have had to be conveyed for the construction of this 48-km. (30-mile) standard-gauge single-track line. The final transport to the site has been partly by motor lorries and partly by horse-drawn vehicles.

Payment of Reichsbahn Wages

By reason of shortage of personnel in the accounts department of the Reichsbahn, all wages and salaries, even those of the lower grades of employees, are being paid into accounts with the 29 Reichsbahn Savings & Loans Banks (*Reichsbahn-Spar-und Darlehenskassen*) as from January 1. It has always been the normal policy of the Reichsbahn (as indeed of practically every railway administration) to pay wages in cash, and to transfer salary balances to bank accounts in only those cases where the recipient specifically requires it. Up to the beginning of the present year, however, about 75 per cent. of the Reichsbahn employees had voluntarily agreed, as a wartime measure, to receive their payments by transfer to accounts ; the remaining 25 per cent. have now been brought into line compulsorily. Cheques against credits in the 29 Reichsbahn Savings & Loans Banks are payable at any railway ticket booking office.

Petrol Rationing in Switzerland

It is reported that the petrol ration in Switzerland has been reduced by a further 25 per cent., and additional efforts have been taken to abolish private motoring.

Trans-Apennine Ropeway

Work has been begun on a trans-Apennine ropeway to connect Genoa and the plains of Lombardy. It is being built by, and will be operated by, the Italian State Railways, as an additional means of freight transport. The ropeway will be 21 miles in length, connecting the port of Genoa with Arquata Scrivia. Proposals have been made for a direct trans-Apennine railway link between Genoa and Borgotaro, on the Spezia-Parma railway, in order to connect Genoa with the Brenner railway and north-eastern Italy in general.

Japan's Railway Equipment

Japanese locomotive and carriage-building companies turned out 1,210 locomotives of all types and 8,882 carriages during 1941, according to Tokyo reports. The total value of this equipment was given as 84,600,000 yen (approximately $19,830,000) against 14,300,000 yen (approximately $3,352,000) in 1937.

Proposed Road between Brazil and British Guiana

The Governor of the State of Bahia (Brazil) recently announced that plans had been made for the construction of important highways linking Brazil and British Guiana. These roads, he said, would facilitate the transport of rubber and other essential products between South and North America.

Army Operation in U.S.A. Strike

As a result of a strike of maintenance employees on the Fairport, Painesville & Eastern RR., a 20-mile mineral line on the south shore of Lake Erie, on November 6, the Army took over on the following day, an Engineers' battalion moving in to operate locomotives and gondola wagons in order to forestall a hold-up in munitions plants served by the railway. The strike was settled on November 10, and the Army then withdrew.

The New Syrian Railway

To mark the completion of the new standard-gauge railway link between Haifa and Tripoli (which formed the subject of an illustrated article in our January 1 issue, pages 10-11), an inscribed obelisk was erected near the spot where General Alexander drove the last spike. The inscription is as follows :—

NEAR THIS SPOT ON 20.12.42 THE LAST SPIKE WAS DRIVEN IN THE BEYROUTH-TRIPOLI RAILWAY BY THE C. IN C., M.E.F., GENERAL HON. SIR HAROLD R. L. G. ALEXANDER, G.C.B., C.S.I., D.S.O., M.C., THEREBY COMPLETING THE LINK BETWEEN LONDON AND CAIRO.

THIS SECTION OF THE LINE WAS BUILT BY THE AUSTRALIAN RAILWAY CONSTRUCTION GROUP DURING THE YEAR 1942.

It is reported from Ankara that this Army-built railway, which is at present reserved exclusively for military use, will be opened to public traffic this summer. It shortens the all-rail journey from Turkey to Egypt to three days.

Communications and the Future

In a paper entitled "Communications—the Key to Economic Order," presented by him to the Leeds Section of the Institute of Transport on January 27 last, Mr. Frederick Smith said that if it had been appreciated in the past that communications were the feature in the national life which, more than any other, must be provided by co-operative means, the general layout of the railways, for example, would have been different; and, if motor vehicles had been available when the railways were built, even greater diversities from the existing railway systems would have been apparent. The whole conception of the system of communications would have been one of unity; the railways would have been considered as continuations of the roads, or as links between roads, where the traffic was of sufficient density to call for their use. This conception of communications should, but, unfortunately, did not, govern the country's wartime transport policy; in a reconstructed economic system it would have to replace a conception of rival transport services, each trying to do work for which the other was technically more suitable.

Mr. Smith said that communications, in the sense in which he was using the word, were the key to economic order, and to the national life. Their true value could not be measured in terms of money, although the amount spent on them reached astonishing figures. He had calculated a year or so ago that the country must have been spending at least £750,000,000 a year on what was described as transport. The latter had an incalculable community-value, and so it was inconceivable that the history of communications between the two wars, and even during the present war, would be allowed to repeat itself.

There seemed to him to be a dual approach to the problem. On one hand communications had to be considered as a branch of the economic life of the community paying its own way, and on the other as an instrument in shaping the planning policy of the nation. The provision of each form of transport had been determined largely by considerations of profitability, but, if the latter had not been apparent, the State would have had to see that they were provided in some way other than by absolute private enterprise. In the years before the war it had become difficult to obtain capital in the investment market for railway development, because the profitability even of established capital equipment, let alone new enterprise, was not apparent. The fact that the railways had to obtain Government guarantees for loans for capital development indicated that, even if the element of profitability was absent, communications were so important that governments would ensure their preservation and development. The conception of communications as an instrument for shaping national planning policy gave rise to two lines of thought: (1) their physical layout in relation to planning of a geographical nature; and (2) their use as an instrument of economic planning, that was to say, as one of fiscal policy—for example, the use of transport rates to assist export policy; he thought the latter to be improper, and that it was wrong to burden one branch of the national life with the assistance of another.

In view of the benefit to the nation of communications, was it right that the burden of their cost should be borne mainly by direct users of them? The question had been considered by the Salter Conference in 1932 as to whether motor transport paid its fair share of the cost of the roads, but only in relation to the burden on the railways of their permanent way. If the real community-value of the roads had been considered, taxation of motor vehicles would have been reduced to that consistent with the direct damage which they did to the roads. That would have created a worse position for the railways, which, he thought, should have been alleviated by relieving them of the cost of permanent way. He suggested that in future that cost might be transferred to the State, leaving with the railways the cost of maintenance, and possibly a yearly toll for exclusive use; taxation on motor vehicles and fuel could be reduced merely to cover damage to the roads; and the operation of both forms of transport could be left to private enterprise within the framework provided by the State. That was an approach to a formidable problem in keeping with our liberal traditions. Each would feel free to develop itself in its proper sphere, which would be, for the railways, the movement of trainloads at high speeds between concentration centres, and, for the roads, transport to and from those centres, and long-distance movement of goods in units insufficient to justify the running of trains.

Mr. Smith visualised the electrification of the railways, for both passenger and goods traffic, and suggested also an increase in the use of electric road vehicles, deriving their power either from overhead wires, or from storage batteries, the charging of which would be rendered easier with the extension of electricity supply throughout the country. That would assist the solution of the post-war import problem, by reducing the amount of fuel oil required from abroad. He hoped also that the concentration of railway traffic would allow the use of wagons of greater capacity.

INSTITUTE OF METALS.—The 35th annual general meeting of the Institute of Metals will be held at the Institution of Mechanical Engineers, Storey's Gate, St. James's Park, S.W.1, on March 3, at 3 p.m., under the chairmanship of the President, Lt.-Colonel Sir John Greenly, K.C.M.G., C.B.E., M.A. The report of the council for the year ended December 31, 1942, and the treasurer's report and statement of accounts for the year ended June 30, 1942, will be presented, and the election of officers and members of council for 1943-44 will be completed. Afterwards the Institute of Metals Medal for 1943 will be presented to Dr. Harold Moore, C.B.E., who will read a short paper on "Co-operative Research in the Metal Industries"; after which the following papers will be discussed: "The Properties of Commercial Coppers containing Selenium, Tellurium, and Bismuth" (by Messrs. G. L. Bailey and A. P. C. Hallowes); "The Effect of Selenium, Tellurium, and Bismuth on Deoxidised Copper for Tube-Manufacture" (by Messrs. M. Cook and G. Parker); and "A Note on the Damping Characteristics of Some Magnesium and Aluminium Alloys" (by Messrs. L. R. Stanton and F. C. Thompson). The meeting will conclude at 5 p.m., and will be succeeded at 5.30 p.m. by the Roberts-Austen Centenary Lecture, to be given by Dr. Sydney W. Smith, C.B.E. The chair will be taken by the President of the Institution of Mechanical Engineers, who will be supported by the President of the Iron and Steel Institute and the President of the Institute of Metals. The three institutions are co-operating in arranging the lecture, which is open to non-members; tickets are not required.

Staff and Labour Matters

Railway Carting Contractors

The National Arbitration Tribunal has recently given its award on a dispute between Wordie & Co. Ltd., railway carting contractors, for the London Midland & Scottish Railway Company, and the Railway Clerks' Association, as to the salaries to be paid to the firm's clerical staff and supervisors. The dispute arose out of a claim made by the Railway Clerks' Association that, as a wartime measure:—

(1) The rates on the base scale for the male clerical staff at the different ages between 15 and 30 years be increased by the addition of £10.

(2) The base scale for the male clerical staff be extended to a maximum of £210 at age 32 and that the class "C" salary scale commence at £220 a year.

(3) The rates of the salary scale of the female clerical staff at the different ages between 15 and 30 years be increased in each instance by the addition of £10.

(4) The scale for the female clerical staff be extended to a maximum of £150 at age 32.

(5) The fixed rates of pay for supervisory foremen in class "D" be increased in each instance by the addition of 4s. a week and that the class "C" scale commence at £220 a year.

The tribunal has awarded that, for the period of the war, the base scales to be observed as respects male and female clerical staffs and supervisory foremen shall be as follow:—

The following scales will apply in accordance with the classification fixed by the company relative to the responsibility of the work performed:—

I. Male Clerical Staff—Base Scale

	A year
Juniors starting at age of 15 years ...	£35
" " or reaching age of 16 ...	£45
" " " " 17 ...	£55
On reaching 18 years of age	£75
" 19 " "	£85
" 20 " "	£95
" 21 " "	£110
" 22 " "	£120
" 23 " "	£130
" 24 " "	£140
" 25 " "	£150
" 26 " "	£160
" 27 " "	£170
" 28 " "	£180
" 29 " "	£180
" 30 " "	£190
" 31 " "	£200
" 32 " "	£210
Class "C" ...	£220 a year rising by £10 after two years to £230.
Class "B" ...	No change.
Class "A" ...	No change.
Special Class ...	No change.

II. Female Clerical Staff—Base Scale

	A year
Juniors starting at age of 15 years ...	£40
" " or reaching age of 16 ...	£45 10
" " " " 17 ...	£55 18
On reaching 18 years of age	£70
" 19 " "	£80
" 20 " "	£88 8
" 21 " "	£93 12
" 22 " "	£98 16
" 23 " "	£104
" 24 " "	£110
" 25 " "	£115
" 26 " "	£120
" 27 " "	£125
" 28 " "	£130
" 29 " "	£130
" 30 " "	£140
" 31 " "	£140
" 32 " "	£150

III. Supervisory Foremen

Class "D" ...	Positions in this class shall carry a fixed rate of not less than 65s. 6d. a week or more than 77s. a week according to the importance of and responsibility for the duties attached thereto.
Class "C" ...	No change.
Class "B" ...	No change.
Class "A" ...	No change.

Westinghouse Brake & Signal Co. Ltd.

The Right Hon. Lord Southborough, Chairman of the company, presiding at the 62nd ordinary annual general meeting on February 16, said that the activities of the company during the financial year ended last September, had been many and had resulted in the highest total output in its history. Every side of the company's activities had been fully extended during the period under review, and the results had been most satisfactory.

All the subsidiary companies made profits in their last financial years. They were all domiciled within the British Empire. On the other hand, the associated companies, with one exception, were domiciled in the enemy-occupied European countries. The one associated company domiciled in Great Britain on account of its peculiar structure and for the purposes of economy, was being voluntarily wound up at the present time.

Captain B. H. Peter, the Managing Director, who was invited by the Chairman to address the meeting, said that at the request of the employees, a special production week was planned during December. Although the works were closed over Christmas for 2¼ days, the total production for December exceeded any production that had ever been reached in the history of the company before in a single month.

There was no stopping in the development and improvement of machine tools and processes. The company had always kept very much ahead as far as possible in progress of that kind, and when big sums in a fluid form were put to reserves they were put there for a very good and a very definite purpose.

Export had always represented a great part of the company's activities. He had every reason to think that in the future the export side might take on an even greater importance to the company. It could not be hoped that after the war they were just going to go back and meet old friends in countries abroad. The company had got to find its way practically into a new world. This would cost money. That money the company had today, and by putting it into fluid reserves it was doing the greatest thing possible for its security in the future.

Retired Railway Officers' Society

At the annual general meeting held at the Great Eastern Hotel, Liverpool Street, on February 9, Mr. J. F. Bradford, who has been President of the society for the past two years, submitted the report and accounts for the year 1942, which were unanimously adopted. Mr. Bradford, in accordance with the decision of a committee of past presidents, submitted the name of Mr. H. R. Campfield as his successor. Mr. Campfield, who had spent the whole of his business career with the G.W.R., and retired from the position of London Divisional Superintendent in 1933, had always taken a keen interest in the society. Messrs. Maynard, Enser, and Bridge supported the proposal, which was carried with acclamation.

Mr. John Pike proposed a hearty vote of thanks to the retiring President, who had conducted the society through two very difficult years and had been most successful in obtaining new members. Mr. Pike also proposed votes of thanks to the Hon. Treasurer, Mr. J. W. Lovejoy, the Hon. Auditors, Mr. J. F. Gee and Lt.-Colonel Wilson, and the Hon. Secretary, Mr. A. S. Mills. All were unanimously elected. The decision come to in December to hold future meetings on the second Tuesday in the month instead of the first was confirmed, and a proposal to revert to the former entrance fee and subscription of £1 1s. in each case was agreed.

The total membership of the society is now 124, only 12 less than at the commencement of the war, which is very gratifying in present circumstances. The average attendance at meetings last year was 25 compared with 20 in the year 1941. New members, of whom there were 13 last year, will be welcomed at the monthly gatherings which provide opportunities of renewing contact with former business acquaintances among retired officers of the four railway groups.

Parliamentary Notes

Grand Union Canal Bill

Petitions praying to be heard against the Grand Union Canal Bill have been lodged by the Chamber of Shipping of the United Kingdom, Hendon Corporation, and Wembley Corporation.

Questions in Parliament

Servicemen's Luggage on Trains

Mr. James Griffiths (Llanelly—Lab.) on February 10 asked the Parliamentary Secretary to the Ministry of War Transport if he would consult with the service departments with a view to reducing the amount of luggage service men were compelled to carry when travelling, as this luggage filled up corridors to the inconvenience and danger of all passengers.

Mr. P. J. Noel-Baker stated, in a written answer: Members of H.M. Forces must travel equipped as fighting units and must therefore take their fighting equipment with them, whether they are travelling on duty or on leave. It has, however, been arranged that, when they travel on leave, they need not carry their kitbags unless they themselves desire to, as in fact they often do. Instructions have also been issued that kitbags shall be marked with the owner's name and number. This facilitates identification and makes it possible to carry them in the luggage van without causing undue delay to trains at stations where members of the Forces alight.

Cargo-Carrying Aircraft

Major A. M. Lyons (Leicester East—C.) on February 10 asked the Minister of Aircraft Production whether he would make a statement as to the progress made in the manufacture of cargo-carrying aircraft.

Sir Stafford Cripps (Minister of Aircraft Production) referred Major Lyons to the answer given by his predecessor on September 9 last.

Major Lyons: Does the Minister realise the great importance at this stage of the war of this type of aircraft, because what was good enough last September will not do in February? Can he make some statement on this subject, in view of the great public interest in it, because people feel very anxious about it?

Sir S. Cripps: On the last occasion my predecessor stated that orders had been placed and a suitable production programme arranged, and that seemed to be a satisfactory answer.

Major Lyons: Can the Minister say whether that suitable programme has reflected itself in suitable deliveries, or is it still a programme on paper?

Sir S. Cripps: It has shown itself in suitable progress with the programme.

Major Lyons gave notice that, because of the unsatisfactory nature of the reply, he would raise the matter on the Adjournment at an early opportunity.

Lighting in Trains

Sir Leonard Lyle (Bournemouth—C.) on February 14 asked the Home Secretary whether he was aware that a statement was issued from his department on January 19 in connection with improved lighting in trains, tending to lead the public to believe improved lighting would be available before long in the majority of trains; and as, in view of the difficulties of obtaining material and labour it would take a long time before improved lighting could be fitted in the majority of passenger rolling stock, he would make a further statement on the subject.

Mr. Herbert Morrison (Home Secretary): The statement to which Sir Leonard Lyle refers gave the specific warning "that some time must elapse before the full effect of the changes becomes operative." As regards the second part of the question, I would refer Sir Leonard Lyle to the answer given him yesterday by the Parliamentary Secretary to the Ministry of War Transport.

Salaried Railway Employees Tax

Mr. G. Mathers (Linlithgow—Lab.) on February 16 asked the Chancellor of the Exchequer whether the deductions of income tax from the salaried employees of railway companies had to comply with the restrictions of deductions arrangements which operated in the case of other workers whose employers acted as his agents in collecting the tax.

The Chancellor of the Exchequer (Sir Kingsley Wood): Arrangements have been made for the application to salaried employees of railway companies of the same rule as regards restriction of deductions as are applied in the case of employees generally.

Mr. Mathers asked from what date that new arrangement was made.

Sir Kingsley Wood replied that it was made some little time ago.

Cheap-Day Fares on Suburban Railways

Mr. J. H. Wootton-Davies (Heywood and Radcliffe—C.) on February 17 asked the Parliamentary Secretary to the Ministry of War Transport if he would consider restoring the issue of cheap-day tickets on all suburban railways, in view of the fact that the withdrawal of these facilities had resulted in bus services being taxed beyond their normal capacity.

Mr. P. J. Noel-Baker (Joint Parliamentary Secretary to the Ministry of War Transport) stated in a written answer: According to the evidence which I have received the withdrawal of cheap day fares on the railways has not, in general, led to a transfer of passenger traffic from rail to road. The withdrawal has, however, brought about the reduction in non-essential travel for which we hoped. For that reason, and others, I am afraid it would not be right to adopt Mr. Wootton-Davies' proposal.

Liverpool Docks Report

Squadron-Leader E. Errington (Bootle—C.) on February 17 asked the Parliamentary Secretary to the Ministry of War Transport, whether he was prepared to state the findings of Sir John Forster's

inquiry into the working of the Liverpool docks; if any recommendations were made; and whether they had been or would be implemented.

Mr. P. J. Noel-Baker in a written reply stated: After consultation with the Minister of Labour & National Service, the Minister of War Transport has decided that it would not be in the public interest to publish the report or the recommendations made by Sir John Forster. Instructions based on the recommendations have been given to the Regional Port Director, and he is acting accordingly. I am grateful to Squadron-Leader Errington for this opportunity of expressing the gratitude of the Government to Sir John Forster, and for the valuable service which he has rendered by his report.

South-East London Tram Services

Lt.-Colonel Sir Assheton Pownall (Lewisham East—C.) on February 17 asked the Parliamentary Secretary to the Ministry of War Transport if he would take steps to remedy the inadequate travel facilities by tramcar between Forest Hill, Catford, and Greenwich, especially in the mornings, and the fact that many workers who had arrived late at their work in consequence had been subjected to police court proceedings and fined.

Mr. P. J. Noel-Baker, in a written answer, stated: During peak periods there are sixteen tramcars an hour between Forest Hill, Catford, and Greenwich. During the hours when workmen's tickets are issued in the morning four additional tramcars run from Catford to Greenwich and Woolwich. The London Passenger Transport Board has made special inquiries and it considers that the service is adequate. Complaints concerning the service can be laid by workers and others before the appropriate transport group set up by the London & South Eastern Regional Board. I understand that, at the moment, there are no outstanding complaints about these services, before this group.

Retail Deliveries Scheme

Mr. Henderson Stewart (East Fife—Lib. Nat.) on February 17 asked the Parliamentary Secretary to the Ministry of War Transport, if there was any town or district in Great Britain, other than St. Andrews, where, under the rationalisation of retail deliveries scheme, all deliveries of composite grocery parcels, except to invalids and similar classes, was prohibited; and, if so, what town or district.

Mr. P. J. Noel-Baker wrote in reply: Yes, sir, there are more than 400 towns and districts in Great Britain where no deliveries of groceries are made, except in cases of hardship. I am sending Mr. Stewart some information concerning these towns and districts, and their distribution in different regions of the country. In the meantime, he may, perhaps, be glad to know that they include such places as Bedford, Ipswich, Worcester, Oxford, Peebles, and Berwick.

Road Safety

Sir Adam Maitland (Faversham—C.) on February 17 asked the Parliamentary Secretary to the Ministry of War Transport if in view of the large number of children whose lives had been lost in road accidents in recent years, he could indicate what special precautions had been taken to instruct children in the correct use of the roads.

Mr. P. J. Noel-Baker wrote in reply: Yes, sir, the Board of Education, the local education and police authorities and the Royal Society for the Prevention of Accidents are working together to secure more teaching in the schools on the subject of road safety. The Minister of War Transport has helped the Royal Society to extend their activities in various ways, and the society are specially emphasising the danger to children in the propaganda campaign which they are now carrying on. The B.B.C. is also arranging talks and "flashes."

Repairs to Roads

Sir Adam Maitland (Faversham—C.) on February 17 asked the Parliamentary Secretary to the Ministry of War Transport if steps were being taken, having due regard to other claims for manpower and to the necessity of saving rubber, to keep road surfaces in good repair.

Mr. P. J. Noel-Baker wrote in reply: Yes, sir, within the limits imposed by the shortage of labour and materials, my ministry have been able to make and to maintain arrangements under which the important roads in the country have been kept in reasonably good repair.

Road Haulage Scheme

Mr. I. C. Hannah (Bilston—C.) on February 17 asked the Parliamentary Secretary to the Ministry of War Transport if he would give an undertaking that small contractors who could not be given a definite place in the new road haulage scheme would be bought out and not simply squeezed out.

Mr. P. J. Noel-Baker stated in a written answer: As Mr. Hannah is, no doubt, aware, the Minister of War Transport has invited a number of hauliers to make their businesses controlled undertakings in the road haulage organisation which he is setting up. Other hauliers, who are not so invited, will be given the opportunity of hiring their vehicles to the Ministry, provided the vehicles are in reasonably good condition, and provided they have been continuously engaged, during the twelve months before the announcement of the scheme, in carrying, wholly or mainly, the classes of traffic which it is proposed to control. Mr. Hannah will see, therefore, that the small contractor, if he so desires, can have a definite place in the new organisation which is being set up.

G.W.R. AND STOVER CANAL.—A special general meeting of the Great Western Railway Company is being called in compliance with Section 45 of the Railway & Canal Traffic Act, 1888, for the purpose of obtaining the approval of the proprietors to an application to the Minister of War Transport for a warrant authorising the abandonment by the company of the Stover Canal in the West of England and an Order releasing the company from all liability in respect of its maintenance or consequent on its abandonment.

The Road Fund

The report on the administration of the Road Fund for the year ended March 31, 1942, presented to Parliament pursuant to Section 3(6) of the Roads Act, 1920, shows that the balance in the fund on April 1, 1941, was £5,484,991; and that the fund received during the year the Parliamentary Grant in Aid of £8,750,000, and miscellaneous receipts of £34,680. These total £14,269,671. The total payments were £9,183,609 (exclusive of recoverable expenditure incurred for other Government Departments), and the balance carried forward at March 31, 1942, was £5,086,062. Payments on revenue account were made in respect of:—

	£
Grants to highway authorities	6,480,604
Trunk roads	2,327,556
Police patrols	215,857
Research and experiments	19,825
Miscellaneous purposes	139,767
	£9,183,609

Outstanding commitments at March 31, 1942, were estimated at £12,109,000, made up as follow:—

	Grants to highway authorities	Trunk roads
	£	£
Maintenance	4,709,000	905,000
Improvements	4,058,000	2,155,000
Miscellaneous	227,000	55,000
	£8,994,000	£3,115,000

The table below shows the grants made during the year ended March 31, 1942. In the public interest many paragraphs and appendices which ordinarily appear in the Road Fund Report have been omitted. In general, however, the normal statistical records have been maintained, and consideration will be given to the publication of these after the war.

Purpose	England and Wales	Scotland	Total
	£	£	£
(I) Maintenance and minor improvement of:—			
(a) Class I roads and bridges	2,921,349	377,599	3,298,948
Grants toward loan charges on (a)	1,677	—	1,677
(b) Class II roads and bridges	1,533,450	231,439	1,764,889
Grants toward loan charges on (b)	553	—	553
(c) Classified roads in cases where the burden of highway expenditure is exceptionally heavy	—	49,839	49,839
Total	£4,457,029	658,877	5,115,906
(II) Improvements, new construction, etc.			
(a) Five-year programme (1935)	180,675	34,804	215,479
(b) Long-term schemes	502,178	—	502,178
(c) Other schemes*	242,143	22,701	264,844
(d) Loan charges (Unemployment Grants Committee) ...	14,108	3,620	17,728
Total	£939,104	61,125	1,000,229
(III) Other road purposes.			
(a) Traffic signs, etc.	90,806	149	90,955
(b) Salaries and establishment charges of surveyors to local authorities	423,815	43,900	467,715
(c) Traffic census	1,042	—	1,042
Total	£515,663	44,049	559,712
Total Grants	£5,911,796	764,051	6,675,847

* Includes schemes attracting normal Road Fund grants, and previously shown under heading "War Schemes." Expenditure on other schemes previously shown under the latter heading has been charged to the Roads, etc Vote, and financed out of Votes of Credit

Notes and News

L.M.S.R. Meeting Change.—For the last ten years the L.M.S.R. ordinary general meeting has been held at Friends' House, Euston Road, but this year, on March 5, it will take place at Euston Station.

Southern Railway General Meeting.—The next general meeting of the Southern Railway Company will be held at Beaver Hall, Garlick Hill, in the City of London, at 11.30 a.m. on March 11. Details are given in our Official Notices at page 227.

New Panamanian Air Transport Company.—An air transport company entitled Aerovias Panamenas S.A. was formed towards the end of last year, with the intention of maintaining regular air services for passengers, freight, and mail, and undertaking aerial survey, photographic, and map work.

The Paris Metro in 1942.—The Official German News Agency has stated that in 1942 the Paris Metro showed an increase in both the number of passengers carried and in receipts. The number of passengers was 1,240,000,000, against 1,040,000,000 in the previous year, and receipts rose to fr. 1,460,000,000 from fr. 1,220,000,000.

G.W.R. Annual General Meeting.—The annual general meeting of the Great Western Railway Company will be held at the Great Western Royal Hotel, Paddington Station, at 11.30 a.m. on March 10. Details of this, and of the special general meeting to be held immediately afterwards, are given in our Official Notices at page 227.

National Omnibus & Transport Co. Ltd.—This company, a subsidiary of Thomas Tilling Limited, reports for the year 1942 a gross profit of £164,827 (£163,625). After deducting directors' fees and £73,500 (£73,000) for taxation the net profit is £90,739 (£90,037). Ordinary dividend is 5½ per cent. tax free (same), and £5,000 (£5,489) is appropriated to general reserve, leaving £29,746 to be carried forward, against £30,256 brought in.

Southern Railway Permanent Way Depot.—Although the labour situation has affected engineering maintenance in many directions it is not being allowed to prejudice the safety and efficiency of railways. A south of England railway-engineering depot, which supplies creosoted and chaired sleepers with other permanent way material for construction and replacement purposes on the Southern Railway, has been making continually increasing use of women. Balks of timber, roughly to size, are trimmed to length, surfaced to take chairs, and drilled in a single machine from which they are loaded into trollies for passing into creosote chambers. Treated sleepers are lined upon a roller conveyor for fitting with chairs. The bulk of the work is done entirely by women, as also is the work of machining switch points and other items. An illustrated article on the depot will appear in a future issue.

Circuit-Breaker Developments.—By the courtesy of Dorman & Smith Limited we have been given an opportunity to examine a 200 A 660 V air-break magnetic-blowout circuit-breaker, recently designed by the firm. One of these circuit-breakers has been operated on a 400 V short-circuit calculated to rise to 38,000 A, and it cleared the circuit so satisfactorily that it could be immediately closed to resume its full current-carrying duty. The closing mechanism, of which there is only one for any number of poles, comprises a toggle lever, held slightly under centre by a catch. Operating spindles and roller catch are made of stainless steel, and wear may therefore be expected to be slight. Practically the whole of the circuit-breaker can be dismantled from the front of the panel by means of locked bolts or setscrews.

Southern Railway (U.S.A.) Museum for Salvage.—During the past 16 years, the Southern Railway of the U.S.A. has been assembling a collection of early signals, rails, and other appliances at Lexington, Kentucky. Towards the end of last year, the museum pieces were turned over for salvage to aid the war production programme, and the museum has been abandoned. Among the interesting exhibits scrapped were a ball signal, a segment of strap rail, a signal brazier (or basket torch), and an early link & pin coupler.

American Railways.—"American Railroads, with special reference to the Milwaukee Company" was the subject of an address to members of the Institute of Transport at Bristol recently by Colonel N. A. Ryan, Acting Chief of Transportation (European Theatre of Operations), U.S. Army. The Milwaukee railway, he said, had an organisation similar to that of all the railways in the United States. It was headed by a board of directors with a chairman, who was more or less inactive in the operation of the undertaking. The board was composed of important business men and influential lawyers, etc. There was a President, who was elected by the board; his job was to finance the property and handle the higher level decisions. Immediately under him there was a chief operating officer, known as the Executive Vice-President, to whom reported the Traffic Vice-President, who was in charge of the solicitation of business, rates, and so forth, the Finance Vice-President, and the Operating Vice-President. There was also a Chief Purchasing Officer and a Law Department. The Mechanical, and Stores, and numerous other departments were under the Operating Vice-President. There was a General Manager for the lines east of the Missouri and a General Manager for the lines to the west.

Opening of L.N.E.R. School for Station Clerical Staff.—Mr. C. H. Newton, Chief General Manager, L.N.E.R., opened, on February 22, a training school for station clerical staff, the first of its kind in this country in being situated entirely under one roof. The school which is contained in Watton House, Hertfordshire, formerly the residence of the late Sir Nigel Gresley, accommodates twenty pupils at a time: the first intake consists of girls, but some courses may be run for youths. The pupils, who are selected mainly from members of the clerical staff, who have completed one or two months' service undergo an intensive course of four weeks' duration in passenger and goods station accounts work. Those present at the opening ceremony in addition to Mr. C. H. Newton, included Messrs. O. H. Corble, Assistant to Chief General Manager; A. L. Gibson, Passenger Manager, Southern Area; C. K. Bird, Goods Manager, Southern Area; C. G. G. Dandridge, Advertising Manager & Assistant Passenger Manager, Southern Area; M. A. Cameron, Assistant Goods Manager, Southern Area; George Dow, Information Agent; L. H. K. Neil, London City Manager; and L. J. Moorcock, London District Passenger Manager. Mr. Newton, in the course of his speech, said that he always had taken a great interest in technical education, and he recalled how different conditions had been when he had entered the railway service from those now prevailing. Mr. Newton described the part which he had played in the formation of the first Accountant's Office Students Society, of which he had been for many years Honorary Secretary; he thought thus that he could claim truly to have been a pioneer in railway technical education. He said that the motto "Be prepared—the opportunity may only come once your way" had served him well, and suggested that they, who were on the threshold of their railway careers, also

British and Irish Railway Stocks and Shares

Stocks	Highest 1942	Lowest 1942	Prices Feb. 19, 1943	Prices Rise/Fall
G.W.R.				
Cons. Ord.	58	39	61½	+ ½
5% Con. Pref. ...	115½	105½	118½	+ ½
5% Red. Pref. (1950)	109½	103½	109	—
5% Rt. Charge ...	133⅜	123⅜	135½	+ 1
5% Cons. Guar ...	130⅜	121½	135	+ 1
4% Deb.	117	105	116½	—
4½% Deb.	118	108	116½	—
4½% Deb.	125	113	121½	—
5% Deb.	137	126	135	—
2½ Deb.	77	70	75	—
L.M.S.R.				
Ord.	28½	16⅜	29¼§	— ¼
4% Pref. (1923) ...	63½	50½	62⅝	— 1
4% Pref.	76½	67½	77⅝	— 2
5% Red. Pref. (1955)	103¾	94⅜	104½	+ 1
4% Guar.	104½	97⅛	104⅛§	— 1
4% Deb.	108¾	101½	110½	+ 1½
5% Red. Deb. (1952)	111	107⅜	108½	— 1
L.N.E.R.				
5% Pref. Ord. ...	9¾	2⅞	8¼	— 1½
Def. Ord. ...	5	1⅜	3½	— 1½
4% First Pref. ...	62	49½	63	—
4% Second Pref. ...	32½	18½	31⅜	— ¾
5% Red. Pref. (1955)	95⅜	79	95½	—
4% First Guar. ...	98	88	99½	— ½
4% Second Guar. ...	90	78	90½	— ½
3% Deb.	85	76	85	— ½
4% Deb.	106⅜	100½	108	— ½
5% Red. Deb. (1947)	106	103	104½	—
4½% Sinking Fund Red. Deb.	106	102½	106⅜	+ 1
SOUTHERN				
Pref. Ord.	77	61½	77	— 1
Def. Ord.	23½	14¼	23½	+ 1½
5% Pref.	112½	104	117½	+ ¼
5% Red. Pref. (1964)	110⅜	105½	111½	+ 2
5% Guar. Pref. ...	131	121½	134½	+ ½
5% Red. Guar. Pref. (1957)	115½	109⅜	115½	—
4% Deb.	116	104½	116	—
5% Deb.	134	125½	135	—
4% Red. Deb. (1962–67)	110⅜	106	110½	—
4% Red. Deb. (1970–80)	111	106½	110½	—
FORTH BRIDGE				
4% Deb.	109 5/16	108	108	
4% Guar.	105½	100	103½	
L.P.T.B.				
4½% "A"	122½	111	123½	—
5% "A"	131½	122	131½	—
3% Guar. (1967-72	95⅜	97⅛	100½	+ 4
5% "B"	121	111¼	121½	—
"C"	56½	38	57½	— 2½
MERSEY				
Ord.	27½	20½	28	—
3% Perp. Pref. ...	61½	56½	59	—
4% Perp. Deb. ...	102⅜	99⅜	104	—
3% Perp. Deb. ...	80¼	76	79	—
IRELAND				
BELFAST & C.D.				
Ord.	9	4	9	—
G. NORTHERN				
Ord.	29¾	12¼	19½	+ 3½
G. SOUTHERN				
Ord.	25	10	10	— 12
Pref.	29	12⅜	15½	+ 4½
Guar.	53	35⅜	37½	+ 2
Deb.	71½	55½	62½	+ 3½

§ ex-dividend

OFFICIAL NOTICES

Great Western Railway Company

NOTICE IS HEREBY GIVEN that the ANNUAL GENERAL MEETING of the Proprietors of this Company will be held in London, at the Great Western Royal Hotel, Paddington Station, on Wednesday, the 10th day of March, 1943, at Half past Eleven o'clock in the morning, for the general purposes of business.

NOTICE IS HEREBY FURTHER GIVEN that a SPECIAL GENERAL MEETING of the Proprietors of this Company will be held at the same place on Wednesday, the 10th day of March, 1943, at 12 o'clock noon—or as soon thereafter as the said Annual General Meeting of the Company, convened for Half past Eleven o'clock in the morning on the same day, is concluded or adjourned—when the following application for a Warrant and Order will be submitted for the consideration and, if thought fit, for the approval of such Meeting, namely :—

"An application to the Minister of War Transport for a Warrant authorising the abandonment by the Company of the Stover Canal and an Order releasing the Company from all liability to maintain the said Canal and from all statutory and other obligations in respect thereof and of or consequent upon the abandonment thereof."

CHARLES J. HAMBRO,
Chairman.

F. R. E. DAVIS,
Secretary.

Paddington Station,
London, W.2.
22nd February, 1943.

IT is desired to secure the full commercial development in the United Kingdom of BRITISH PATENT No. 341,172, which relates to "Improvements in Electric Locomotives," either by way of the grant of licences or otherwise on terms acceptable to the Patentees. Interested parties desiring copies of the patent specification and further particulars, should apply to STEVENS, LANGNER, PARRY & ROLLINSON, 5 to 9, Quality Court, London, W.C.2.

Southern Railway Company

NOTICE IS HEREBY GIVEN that the next ANNUAL GENERAL MEETING of the Southern Railway Company will be held at Beaver Hall, Garlick Hill, in the City of London, on Thursday, the 11th day of March, 1943, at 11.30 a.m. for the purpose of receiving the Accounts for the past year, and transacting general business.

T. E. BRAIN,
Acting Secretary.

Waterloo Station,
London,
18th February, 1943.

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should be prepared: he wanted to help them in that, which was why the school, the third to be opened by the company, had been formed. In conclusion, Mr. Newton said: "I look into the future and feel that today we are passing another milestone in railway staff education, for here we have an idea and a model that may well attain maturity in the post-war years."

Great Western Railway Company.—The following announcement was issued on February 19: The net revenue of the company for the year 1942 is £6,932,746, an increase of £979 compared with the net revenue of the company for the year 1941. The sum available for distribution, including the balance of £263,938 brought forward from the previous year, is £7,196,684. After meeting the interest and dividends on the pre-ordinary stocks, there remains a balance of £2,206,915 and the directors have decided to recommend the payment of a dividend for the half-year ended December 31, 1942, of £2 10s. per cent. on the consolidated ordinary stock, making £4 10s. per cent. for the year, leaving a balance to be carried forward of £275,077. The dividend warrants will be posted on or about March 17.

London Passenger Transport Board.—The following statement was issued on February 18: The London Passenger Transport Board announces that the net revenue of the board for the year 1942, after giving effect to the estimated operation of the financial arrangements provided for in the Railway Control Agreement, and including a profit on the realisation of investments and the balance of the London Transport "C" stock interest fund, amounts to £4,882,917. The payment of interest on the prior charge London Transport stocks requires £4,080,447, leaving, for the service of London Transport "C" Stock, a balance of £802,470. The board now announces that a final payment of interest on London Transport "C" Stock for the year ended December 31, 1942, will be made by the board's registrars, the Bank of England, on March 19, 1943, to all holders of London Transport "C" Stock registered in the books of the Bank of England at the close of business on February 22, 1943, of 1¾ per cent. actual, less income tax at 10s. in the £, making with the interim payment of 1¼ per cent. on August 21, 1942, a total of 3 per cent. actual for the year, compared with 2⅞ per cent. for the previous year. The sum of £31,506 remaining after the payment of this interest, being less than one-eighth of one per cent. on the London Transport "C" stock outstanding, has, in accordance with Section 39 (7) (ii) of the London Passenger Transport Act, 1933, been transferred to the London Transport "C" stock interest fund. The board also announces that it will shortly transmit to the Minister of War Transport the report and statement of accounts and the auditors' report for the year ended December 31, 1942. Copies of the annual report and statement of accounts will not be posted to the stockholders, because of the need to conserve paper, but copies will be on sale at the price of sixpence at the offices of the board, 55, Broadway, Westminster, S.W.1, on and after March 12, 1943.

Southern Railway Company.—The following statement was issued on February 18: The directors of the Southern Railway Company announce that for the year 1942 the total net revenue amounts to £6,913,514, a decrease compared with that for the year 1941 of £20,746. The balance brought forward from the previous year was £101,336, making the total sum available for distribution £7,014,850. After meeting the interest and dividends on the pre-ordinary stocks the amount available for dividend on the ordinary stocks for the year is £2,020,405. The directors have resolved to recommend the proprietors to declare the following dividends :—

- A final dividend of 2½ per cent. on the preferred ordinary stock, making, with the interim dividend of 2½ per cent. already paid, 5 per cent. for the year.
- 1¾ per cent. for the whole year on the deferred ordinary stock.

For the previous year a dividend of 5 per cent. was paid on the preferred ordinary stock, and 1¾ per cent. was paid on the deferred ordinary stock. The balance carried forward is £89,996 compared with £101,336. It is proposed to pay the dividends, less income tax at the rate of 10s. in the £, on Friday, March 26.

London & North Eastern Railway Company.—The financial arrangements with H.M. Government as embodied in the Railway Control Agreement provide for payment to the London & North Eastern Railway Company during the period of control of a fixed annual sum of £10,136,355, to which must be added the net revenue of undertakings excluded from the scope of the control agreement amounting to £564,244 making a total of £10,700,599 and showing an increase compared with the net revenue of the company for the year 1941 of £53,572. The balance brought forward from 1941 was £86,675, making the total sum available for distribution £10,787,274. After meeting the interest on the debenture stocks and the dividends on the guaranteed stocks, and setting aside £200,000 to the fund for contingencies, the directors recommend that, subject to final audit, dividends be paid by warrant as under :—

- A final dividend of 2 per cent. on the 4 per cent. first preference stock, making, with the interim dividend of 2 per cent. already paid, 4 per cent. for the year ;
- A final dividend of 2½ per cent. on the 5 per cent. redeemable preference stock (1955), making, with the interim dividend of 2½ per cent. already paid, 5 per cent. for the year ;
- A final dividend at the rate of 1⅝ per cent. on the 4 per cent. preference stock, making, with the interim dividend of 1 per cent. already paid, 2⅝ per cent. for the year ;

in each case less income tax at 10s. in the £, leaving a balance of £78,476 to be carried forward. Subject to the approval of the stockholders of these recommendations, warrants will be posted on March 17.

Contracts and Tenders

The Bengal-Nagpur Railway has placed contracts with the Churchill Machine Tool Co. Ltd. for a vertical spindle grinding machine, and with Robert Stephenson & Hawthorns Limited for 15 "L" class locomotive boilers.

The Egyptian State Railways recently have placed the following orders :—

Hall Harding Limited: Reflectors.
Pickford Tool Co. Ltd.: Taps.
Phosphor Bronze Co. Ltd.: Phosphor copper.
Armstrong Oiler Co. Ltd.: Armstrong oilers
Hulburd Patents Limited: Copper joints.
Ibbotson Brothers & Co. Ltd.: Springs.
Hoffmann Manufacturing Co. Ltd.: Ball bearings.
Tubes Limited: Steel tubes.
Firth-Vickers Stainless Steels Limited: Stainless steel.
W. Tyzack Sons & Turner Limited: Railcar spares.
Standard Telephones & Cables Limited: Lead-covered cable.
Joint Controllers of Non-Ferrous Metals: Tin ingots.
Superheater Co. Ltd.: Superheater elements.
British Oxygen Co. Ltd.: Welding materials.
William Jacks & Co. Ltd.: Pig iron.
Bayliss, Jones & Bayliss Limited: Screwpikes.
Thomas Bolton & Sons Ltd.: Brass bars and sheets.
Turner Brothers Asbestos Co. Ltd.: Gland packings, etc.
W. M. Willcox & Co. Ltd.: Spanners.

Railway Stock Market

Inactive and moderately reactionary conditions have ruled in Stock Exchange markets, but there was again very little selling, although some profit-taking was in evidence in high-priced industrial investments which have recorded a good rise in recent months. Sentiment reflected the continued accumulation of investment funds in preparation for the "Wings for Victory" campaign. This week dividends were deducted from the majority of home railway junior stocks. Prices were also affected by profit-taking, but this was by no means heavy. Consideration of the figures for the past year shows that a liberal policy has been followed in the matter of dividends. This is, of course, justified by the fixed rental agreement, but it is apparent that some of the dividend estimates recently current in the market were pitched too high. Yields on the junior stocks must now be considered as having a very generous appearance, and the view persists that there is probably good scope for appreciation in prices when a buoyant trend again develops in markets. L.M.S.R. ordinary now yields 8½ per cent., and the return on L.N.E.R. second preference is approximately 8⅜ per cent.; both these stocks appear to be undervalued in relation to Southern deferred, which yields 8 per cent. The 2½ per cent. dividend on L.M.S.R. ordinary was in accordance with highest estimates, and the 4½ per cent. on Great Western was in line with general expectations; the 2⅝ per cent. on L.N.E.R. second preference was only slightly below best hopes. Absence of an increase in the payment on Southern deferred, which is again 1¾ per cent., caused disappointment in the market; the 3 per cent. on London Transport "C" was the best that could reasonably be expected. The belief is gaining ground that there may be little prospect of growth in ancillary revenue, and that it would, therefore, be prudent to take the view that dividends during the war are unlikely to exceed those for the past year. Nevertheless, the dividend outlook until at least one year after the war is, of course, much more clearly defined than in the case of industrial shares and other groups of equity securities. Yields on L.N.E.R. first preference, L.M.S.R. 1923 preference, and Southern preferred must also be considered as having a generous appearance, considering their good investment merits under the rental agreement, and these stocks should offer scope for appreciation in value, bearing in mind that as time proceeds, yield considerations may attract increased attention.

Compared with a week ago, Great Western has declined from 62 to 59 xd.; the 5 per cent. preference and guaranteed stocks were 117½ xd. and 133½ xd. respectively, and the 4 per cent. debentures improved half-a-point to 117. L.M.S.R. ordinary was relatively steady, being 29¼ at the time of writing, compared with 29½ a week ago; the senior preference, however, went back from 78 xd. to 76½, the 1923 preference from 63 xd. to 62, and the guaranteed stock was 104½, compared with 105 xd. a week ago. Southern deferred reacted sharply on balance from 26¼ to 22 xd., and the preferred was 75 xd., compared with 78½; sentiment was affected by the fact that total revenue last year declined by £20,746, and that in order to maintain the 1¾ per cent. dividend on the deferred stock, £11,340 has to be drawn from the carry forward. L.N.E.R. second preference, 33½ a week ago, has moved down to 31 xd., and the first preference from 64 to 61 xd. London Transport "C" went back sharply to 54½ xd., compared with 60 a week ago; the dividend statements have tended to draw attention to the yield being below that on the junior stocks of the main-line companies. Nevertheless, all factors considered, the return on London Transport "C" is not unattractive.

Among foreign railway stocks the tendency was dull. Central Uruguay second debentures, however, improved to 23½, while Leopoldina debentures were higher and Nitrate Rails bearer shares advanced to 81s. 3d. Canadian Pacifics had a steadier appearance.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open	Week Ending	Traffic for Week: Total this year	Traffic for Week: Inc. or Dec. compared with 1941/2	No. of Weeks	Aggregate Traffics to date: Totals 1942/3	Aggregate Traffics to date: Totals 1941/2	Aggregate Traffics to date: Increase or Decrease	Shares or Stock	Prices: Highest 1942	Prices: Lowest 1942	Prices: Feb. 19, 1943	Yield % (See Note)
South & Central America	Antofagasta (Chili) & Bolivia	834	14.2.43	£ 26,920	+ £ 12,220	7	£ 188,510	£ 136,230	+ £ 52,280	Ord. Stk.	14	7⅜	11	Nil
	Argentine North Eastern ...	753	13.2.43	10,032	+ 1,446	33	411,168	354,258	+ 56,910	"	6¼	3	6	Nil
	Bolivar	174	Jan., 1943	5,292	+ 332	4	—	—	+ —	6 p.c. Deb.	19½	10	19½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds	20½	9	20½	Nil
	Buenos Ayres & Pacific ...	2,807	13.2.43	113,400	+ 5,460	33	3,119,040	2,728,920	+ 390,120	Ord. Stk.	7½	4	6	Nil
	Buenos Ayres Great Southern	5,080	13.2.43	214,920	+ 42,240	33	5,107,440	4,660,740	+ 446,700	Ord. Stk.	12½	7⅛	10¼	Nil
	Buenos Ayres Western ...	1,930	13.2.43	66,600	+ 16,380	33	1,746,660	1,670,940	+ 75,720	"	12¼	6	11½	Nil
	Central Argentine	3,700	13.2.43	147,705	+ 39,159	33	4,308,177	3,489,273	+ 818,904	"	9½	4 1/16	7⅛	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	3⅜	2½	4½	Nil
	Cent. Uruguay of M. Video...	972	13.2.43	40,010	+ 10,961	33	830,883	772,984	+ 57,899	Ord. Stk.	8	4	5½	Nil
	Costa Rica	262	Jan., 1943	16,637	— 6,836	31	96,550	159,462	— 62,900	Stk.	16½	11	13½	Nil
	Dorada	70	Jan., 1943	6,000	+ 3,530	4	—	—	—	1 Mt. Db.	90½	89	89½	6⅛
	Entre Rios	808	13.2.43	18,414	+ 6,042	33	595,902	515,904	+ 79,998	Ord. Stk.	33	4½	6½	Nil
	Great Western of Brazil ...	1,030	13.2.43	19,600	+ 7,700	6	111,900	82,300	+ 29,600	Ord. Sh.	9/-	9/-	33/9	Nil
	International of Cl. Amer. ...	794	Nov., 1942	$481,524	— $50,446	52	$5,554,318	$5,097,659	+ $456,659	—	—	—	—	—
	Interoceanic of Mexico ...	—	—	—	—	—	—	—	—	1st Pref.	1⅛	5/3	2	Nil
	La Guaira & Caracas... ...	22¾	Jan., 1943	9,435	+ 3,005	4	9,435	6,430	+ 3,005	5 p.c. Deb.	11⅛	5	81⅛§	Nil
	Leopoldina		13.2.43	33,283	+ 2,290	33	192,212	188,178	+ 4,034	Ord. Stk.	6⅜	3½	4½	Nil
	Mexican	483	14.2.43	ps. 345,200	+ ps. 7,100	6	ps.1,902,600	ps. 2,102,600	— ps. 300,000	Ord. Stk.	1	⅛	1⅛	Nil
	Midland Uruguay	319	Dec., 1942	15,294	+ 2,038	27	621,158	618,694	+ 2,464	—	—	—	—	—
	Nitrate	382	15.2.43	6,190	+ 1,630	6	18,341	15,596	+ 2,745	Ord. Sh.	77/-	3½	80/-	Nil
	Paraguay Central	274	12.2.43	$3,919,000	+ $679,000	34	$126,255,000	$112,914,000	+ $13,341,000	Pr. Li. Stk.	53	40	50½	11⅛
	Peruvian Corporation ...	1,059	Jan., 1943	85,767	+ 5,338	28	583,434	512,971	+ 70,463	Pref.	19⅞	5⅛	15½	Nil
	Salvador	100	Dec., 1942	c 112,000	— c 5,000	26	c 432,000	c 361,172	+ c 70,828	—	—	—	—	—
	San Paulo	153½	7.2.43	37,121	— 128	6	191,642	194,667	— 3,025	Ord. Stk.	59	41	59	3⅓
	Taltal	160	Jan., 1943	3,330	+ 195	29	34,416	30,895	+ 3,521	Ord. Sh.	41/-	23/4	32/6	Nil
	United of Havana	1,346	13.2.43	52,877	+ 2,401	32	1,507,729	689,195	+ 818,534	Ord. Stk.	8⅛	2½	6	Nil
	Uruguay Northern	73	Dec., 1942	1,595	+ 311	27	59,817	60,757	— 940	—	—	—	—	—
Canada	Canadian Pacific	17,039	14.2.43	971,200	+ 81,600	6	5,672,600	5,523,000	+ 149,600	Ord. Stk.	16¾	9 7/16	14¾	Nil
India†	Barsi Light	202	Jan., 1943	22,440	+ 10,612	42	172,958	135,863	+ 37,095	—	—	—	—	—
	Bengal & North Western ...	2,090	Nov., 1942	264,975	— 33,087	8	449,400	561,082	— 111,682	—	—	—	—	—
	Bengal-Nagpur	3,267	30.9.42	275,550	— 17,775	26	5,085,678	4,788,758	+ 296,920	Ord. Stk.	102½	88	102⅛	3⅛
	Madras & Southern Mahratta	2,939	10.12.42	219,525	+ 8,058	24	5,914,276	4,996,457	+ 917,819	"	105½	87	108½	5⅛
	Rohilkund & Kumaon ...	571	Nov., 1942	555,750	+ 5,072	8	115,950	99,909	+ 16,041	—	—	—	—	—
	South Indian	2,402	30.9.42	185,811	+ 31,733	26	3,293,328	2,670,410	+ 622,918	"	103¾	88⅞	102⅛	4 7/16
Various	Egyptian Delta	607	31.12.42	19,116	+ 6,849	40	343,745	247,725	+ 96,020	Prf. Sh.	5½	1⅛	4	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	44	35	42	8⅛
	Midland of W. Australia ...	277	Dec., 1942	30,416	+ 11,471	24	190,328	122,537	+ 67,791	Inc. Deb.	95	90	93½	6
	Nigerian	1,900	31.10.42	60,590	+ 13,688	31	1,833,420	1,542,694	+ 290,726	—	—	—	—	—
	South Africa	13,291	5.12.42	796,375	— 33,879	37	28,131,557	27,134,897	+ 996,660	—	—	—	—	—
	Victoria	4,774	Oct., 1942	1,445,531	+ 309,932	—	—	—	—	—	—	—	—	—

Note. Yields are based on the approximate current prices and are within a fraction of 1/8

† Receipts are calculated @ 1s. 6d. to the rupee

Argentine traffics are given in sterling calculated @ 16⅜ pesos to the £

§ ex dividend